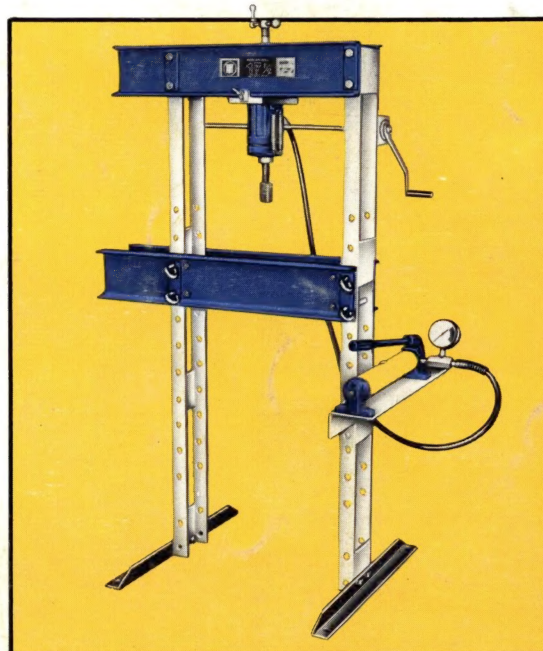


otc

DIVISION OF OWATONNA TOOL COMPANY
Owatonna, Minnesota 55060, U.S.A.
Cable: TOOLCO

T.M.

Maintenance Tools and Equipment





T.M.

... **LEADERSHIP** *in engineering, design and craftsmanship*

Over half a century of progressive engineering and creative know-how stands behind every product bearing the OTC trademark . . . a trusted symbol of quality and business integrity.

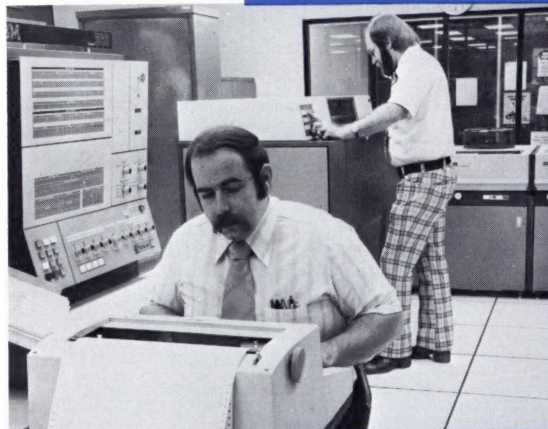
WORLD-WIDE AVAILABILITY AND SERVICE

It can truly be said that the sun never sets on OTC tools. The company's products have found satisfied users in over 100 free world nations—from Afghanistan to Zambia. Throughout the United States and Canada, a network of Authorized Warehouse Distributors assures prompt local availability of products. Coast-to-coast servicing of OTC equipment items is provided by Authorized OTC Repair Stations. Desired technical and marketing assistance is available through OTC's force of highly-trained field sales representatives. A wide variety of informative sales and technical literature is also available from OTC.



ORDER PROCESSING

The installation of IBM System 360 data-processing equipment marks OTC's progress in this computer age. An unprecedented degree of speed and accuracy is now possible in production and inventory control, order processing and invoicing. This continuing effort to apply the latest advances to every phase of OTC's operations assures its valued customers of prompt service and delivery.



A partial view of OTC's sophisticated data-processing installation.

CREATIVE ENGINEERING AND PRODUCT DEVELOPMENT

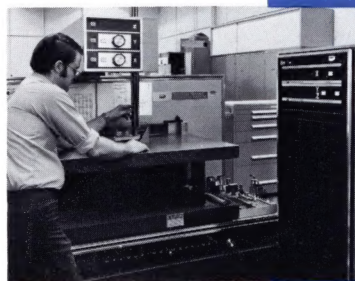
OTC's experienced, dedicated staff of tool and equipment engineers analyzes the needs of today's dynamic, modern industries, and designs tools and equipment that solve difficult and time consuming maintenance and repair problems. Thorough planning and sound thinking are the foundations of OTC design engineering.



The highly skilled OTC engineering staff analyzes a multitude of industry problems daily.

QUALITY CONTROL

The entire OTC manufacturing cycle, from careful selection of raw materials to painstaking finishing, is conducted under strict quality control. Precision testing instruments are employed by trained technicians to assure that every product bearing the OTC trademark lives up to the company's well-earned reputation.



Digital readouts to 1/10,000 of an inch assure the most accurate checking of tolerances for quality control.

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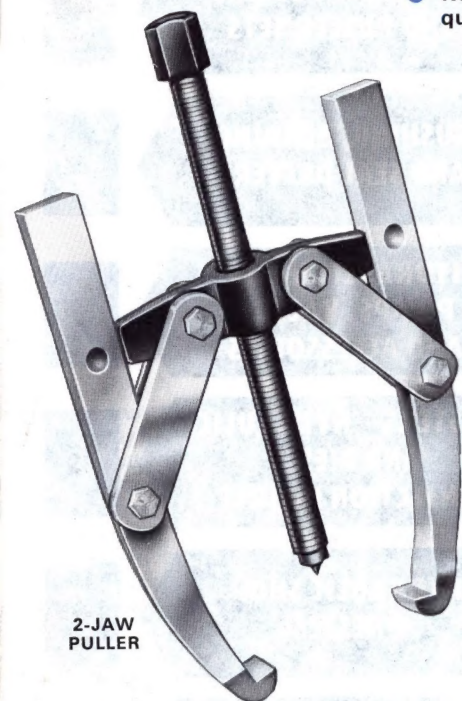


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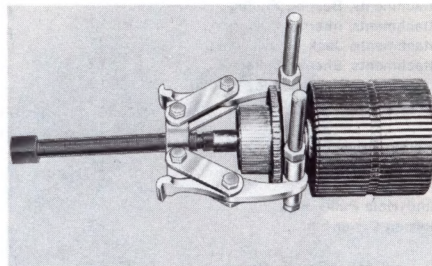
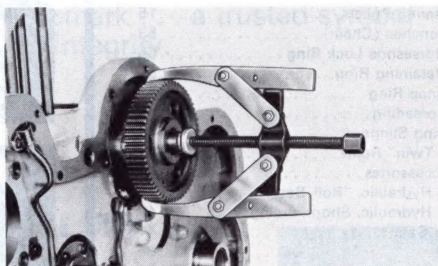
Grip-O-Matic® PULLERS

Fed. Spec.: GGG-P-00781D

- Remove gears, bearings, pulleys, wheels, etc., quickly and easily!
- The more pressure applied, the tighter they grip.
- 2-jaw, 3-jaw and combination models available for pulling versatility.



2-JAW PULLER



Rugged design and simple adjustment make OTC pullers easy to use!

STYLES OF PULLER CROSS HEADS



2-JAW HEAD



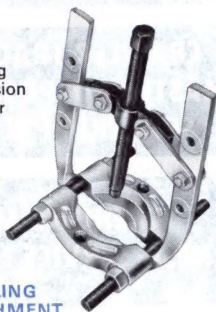
3-JAW HEAD



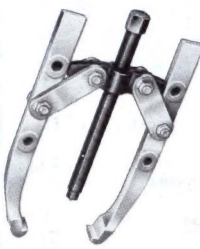
2/3-JAW COMBINATION

ACCESSORIES AVAILABLE FOR USE WITH THESE PULLERS... SEE PAGES 12 AND 13 FOR COMPLETE INFORMATION!

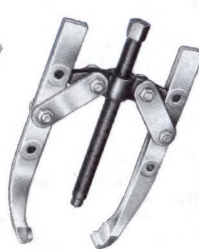
OTC pulling attachments can make the difficult pulling job easy. They assure precision pulling of bearings and other hard-to-grip parts. Whether it's a splitter, step plate or shaft protector, you'll see that it will solve your toughest pulling problem.



PULLING ATTACHMENT

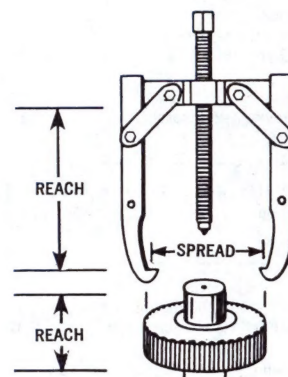


STEP PLATE



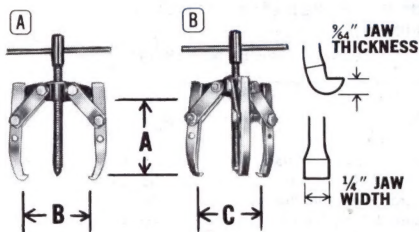
SHAFT PROTECTOR

HOW TO CHOOSE THE RIGHT SIZE PULLER



As shown above, compare the "reach" and the "spread" of the pulling job with that of the pullers listed. The puller selected must have dimensions equal to or greater than those of the job. If certain clearance problems exist, a 3-jaw puller may be necessary.

1-TON CAPACITY

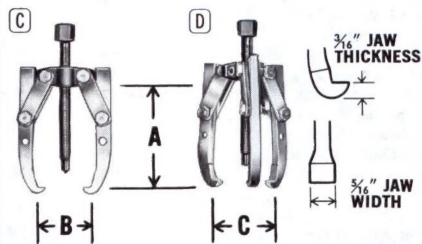


STANDARD JAW PULLER

A No. 1000—2-jaw puller. Wt. 5 oz.
A—REACH: 2½" max.
B—SPREAD: 3¼" max.
SCREW SIZE: ⅝"-24 x 3⅞" lg.

B No. 1010—3-jaw puller. Wt. 8 oz.
A—REACH: 2½" max.
C—SPREAD: 3¼" max.
SCREW SIZE: ⅝"-24 x 3⅞" lg.

2-TON CAPACITY

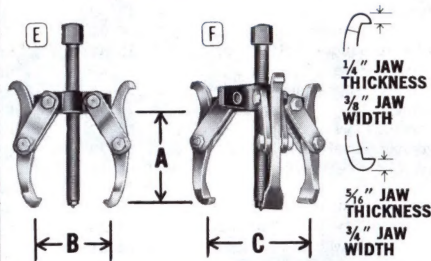


STANDARD JAW PULLER

C NO. 1000½-L—2-jaw puller. Wt. 14 oz.
A—REACH: 3½" max.
B—SPREAD: 4" max.
SCREW SIZE: ¾" x 4⅞" lg.

D No. 1010½-LA—Comb. 2-jaw, 3-jaw puller. Wt. 1½ lbs.
A—REACH: 3½" max.
C—SPREAD: 4¾" max.
SCREW SIZE: ¾" x 4⅞" lg.

5-TON CAPACITY



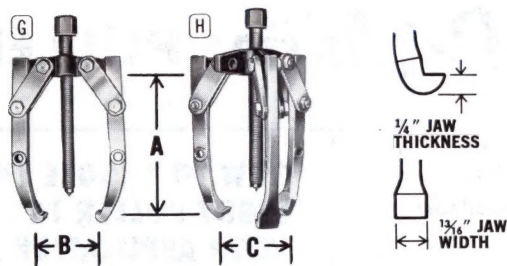
REVERSIBLE JAW PULLER

E No. 1001—2-jaw puller.* Wt. 1½ lbs.
A—REACH: 3½" max.
B—SPREAD: 6" max.
SCREW SIZE: ⅝" x 6⅞" lg.

F No. 1011-A—Comb. 2-jaw, 3-jaw puller.* Wt. 2½ lbs.
A—REACH: 3½" max.
C—SPREAD: 7" max.
SCREW SIZE: ⅝" x 6⅞" lg.

*With double-end, reversible jaws

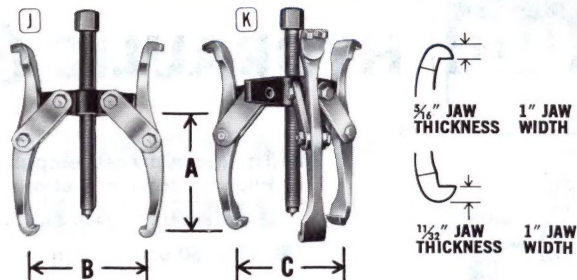
5-TON CAPACITY



LONG JAW PULLER

- G** No. 1001-L—2-jaw puller. Wt. 2 lbs.
A—REACH: 5 1/2" max.
B—SPREAD: 6" max.
SCREW SIZE: 5/16" x 6 1/8" lg.
- H** No. 1011A-L—Comb. 2-jaw, 3-jaw puller. Wt. 3 1/4 lbs.
A—REACH: 5 1/2" max.
C—SPREAD: 7" max.
SCREW SIZE: 5/16" x 6 1/8" lg.

7-TON CAPACITY

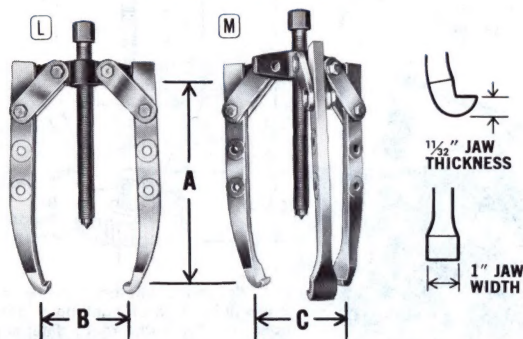


REVERSIBLE JAW PULLER

- J** No. 1002—2-jaw puller.*
 Wt. 4 1/2 lbs.
A—REACH: 5" max.
B—SPREAD: 9" max.
SCREW SIZE: 1/2" x 9" lg.
- K** No. 1012-A—Comb. 2-jaw, 3-jaw puller.* Wt. 6 1/2 lbs.
A—REACH: 5" max.
C—SPREAD: 10 1/2" max.
SCREW SIZE: 1/2" x 9" lg.

*With double-end, reversible jaws

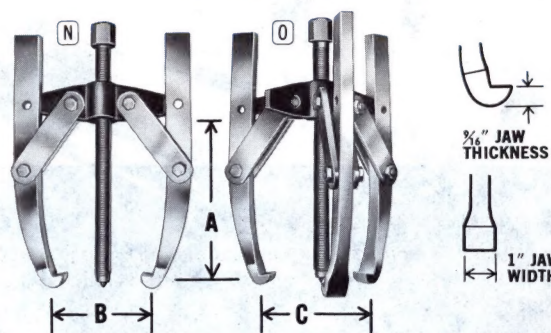
7-TON CAPACITY



LONG JAW PULLER

- L** No. 1002-L—2-jaw puller. Wt. 5 lbs.
A—REACH: 8 1/2" max.
B—SPREAD: 9 1/2" max.
SCREW SIZE: 1/2" x 9" lg.
- M** No. 1012A-L—Comb. 2-jaw, 3-jaw puller. Wt. 7 1/4 lbs.
A—REACH: 8 1/2" max.
C—SPREAD: 11" max.
SCREW SIZE: 1/2" x 9" lg.

13-TON CAPACITY



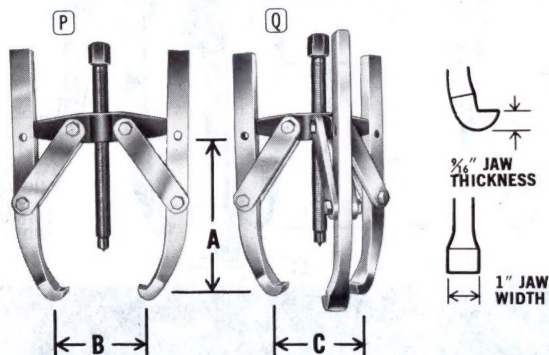
STANDARD JAW PULLER

- N** No. 1003—2-jaw puller.
 Wt. 10 1/2 lbs.
A—REACH: 11" max.
B—SPREAD: 12 1/2" max.
SCREW SIZE: 1/2" x 12" lg.
- O** No. 1013-A—Comb. 2-jaw, 3-jaw puller. Wt. 14 1/2 lbs.
A—REACH: 11" max.
C—SPREAD: 14" max.
SCREW SIZE: 1/2" x 12" lg.

LONG JAW PULLER

- N** No. 1003-L 2-jaw puller.
 Wt. 13 lbs.
A—REACH: 15 1/2" max.
B—SPREAD: 15 1/2" max.
SCREW SIZE: 1/2" x 12" lg.
- O** No. 1013A-L—Comb. 2-jaw, 3-jaw puller. Wt. 18 1/2 lbs.
A—REACH: 15 1/2" max.
C—SPREAD: 17" max.
SCREW SIZE: 1/2" x 12" lg.

17 1/2-TON CAPACITY



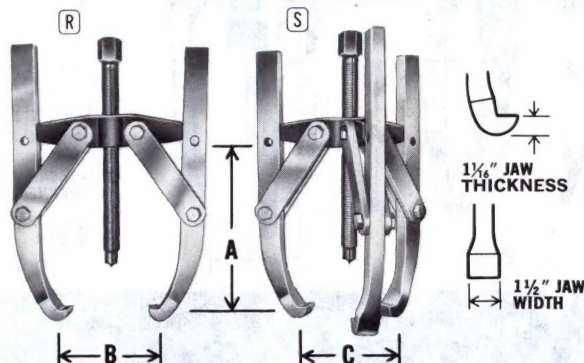
STANDARD JAW PULLER

- P** No. 1003 1/2—2-jaw puller.
 Wt. 23 lbs.
A—REACH: 14 1/2" max.
B—SPREAD: 14" max.
SCREW SIZE: 1" x 13 1/2" lg.
- Q** No. 1013 1/2—3-jaw puller.
 Wt. 33 lbs.
A—REACH: 14 1/2" max.
C—SPREAD: 14" max.
SCREW SIZE: 1" x 13 1/2" lg.

LONG JAW PULLER

- P** No. 1003 1/2-L—2-jaw puller.
 Wt. 26 lbs.
A—REACH: 18 1/2" max.
B—SPREAD: 16" max.
SCREW SIZE: 1" x 13 1/2" lg.
- Q** No. 1013 1/2-L—3-jaw puller.
 Wt. 37 lbs.
A—REACH: 18 1/2" max.
C—SPREAD: 16" max.
SCREW SIZE: 1" x 13 1/2" lg.

25-TON CAPACITY



STANDARD JAW PULLER

- R** No. 1004—2-jaw puller.
 Wt. 37 1/2 lbs.
A—REACH: 15 1/2" max.
B—SPREAD: 16" max.
SCREW SIZE: 1 1/4" x 16 1/2" lg.
- S** No. 1014—3-jaw puller. Wt. 54 lbs.
A—REACH: 15 1/2" max.
C—SPREAD: 16" max.
SCREW SIZE: 1 1/4" x 16 1/2" lg.

LONG JAW PULLER

- R** No. 1004-L—2-jaw puller.
 Wt. 42 1/2 lbs.
A—REACH: 22 1/2" max.
B—SPREAD: 20" max.
SCREW SIZE: 1 1/4" x 16 1/2" lg.
- S** No. 1014-L—3-jaw puller. Wt. 60 lbs.
A—REACH: 22 1/2" max.
C—SPREAD: 20" max.
SCREW SIZE: 1 1/4" x 16 1/2" lg.



T.M.

Fed. Spec.: GGG-P-00781D

HYDRAULIC Grip-O-Matic® PULLERS

- The more pressure applied, the tighter they grip. Plus . . . torque is eliminated from pulling.
- Versatile 2-jaw and 3-jaw models available.
- 17½, 30 and 50-ton capacities.

OTC matched its versatile line of "Grip-O-Matic" pullers with the precision and efficiency of hydraulic power and came up with six great hydraulic puller units! Even the most stubborn pulling job now becomes easy with OTC hydraulic power. Available in both 2-jaw and 3-jaw models, these "Grip-O-Matic" pullers are equipped with OTC's famous "Power-Twin" center-hole ram. Lightweight, single-acting, spring-return, each ram can be used in other applications. You also get an adjusting screw, crank and coupler. Available in 17½, 30 and 50-ton capacities.

2-JAW

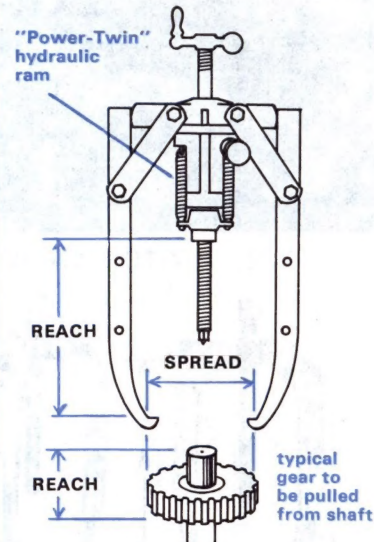
HYDRAULIC POWER UNITS

Manual, electric, air-driven and gasoline engine powered OTC hydraulic pumps are available for use with these pullers. Pumps are not included with pullers, but must be ordered separately . . . see pages 32-41.

ATTACHMENTS A full line of versatile pulling attachments is shown and listed on pages 12 and 16 of this catalog. Hydraulic hoses are not supplied with puller . . . see page 42 for order information.

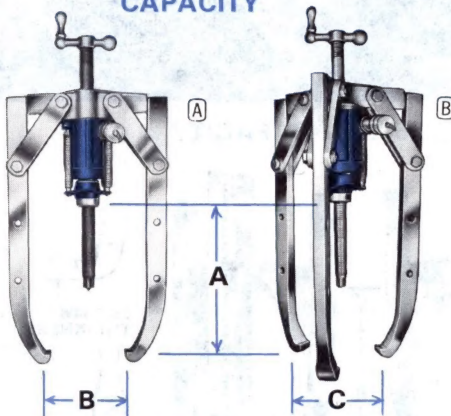
HOW TO CHOOSE THE RIGHT PULLER FOR YOUR APPLICATION...

typical pulling problem:



First, determine whether a 2-jaw or a 3-jaw puller is best for getting a "good hold" on the part. Then, determine the "reach, spread" and "capacity in tons" to do the job.

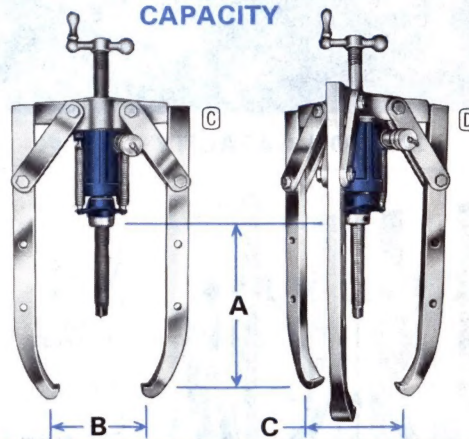
17½-TON CAPACITY



2-JAW PULLER

3-JAW PULLER

30-TON CAPACITY



2-JAW PULLER

3-JAW PULLER

A

No. 1003½-HLY—2-jaw puller with Y15-A hydraulic ram, Y15-12 adjusting screw and Y15-13 adjusting crank. Wt. 40 lbs.

A—REACH: 11½" max.

B—SPREAD: 16" max.

SCREW SIZE: 1" x 20" lg.

No. 1003½-LY—2-jaw puller *only* (ram, screw and crank *not* included). Wt. 24 lbs.

B

No. 1013½-HLY—3-jaw puller with Y15-A hydraulic ram, Y15-12 adjusting screw and Y15-13 adjusting crank. Wt. 53 lbs.

A—REACH: 11½" max.

C—SPREAD: 20" max.

SCREW SIZE: 1" x 20" lg.

No. 1013½-LY—3-jaw puller *only* (ram, screw and crank *not* included). Wt. 37 lbs.

C

No. 1005-HLY—2-jaw puller with Y30-A hydraulic ram, Y30-12 adjusting screw and Y30-13 adjusting crank. Wt. 91 lbs.

A—REACH: 19¼" max.

B—SPREAD: 26" max.

SCREW SIZE: 1½" x 24" lg.

No. 1005-LY—2-jaw puller *only* (ram, screw and crank *not* included). Wt. 59 lbs.

D

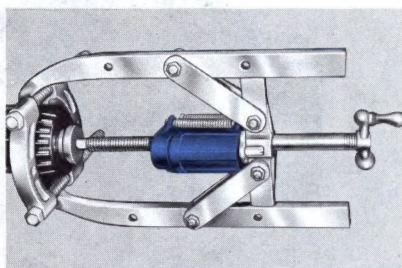
No. 1015-HLY—3-jaw puller with Y30-A hydraulic ram, Y30-12 adjusting screw and Y30-13 adjusting crank. Wt. 122 lbs.

A—REACH: 19¼" max.

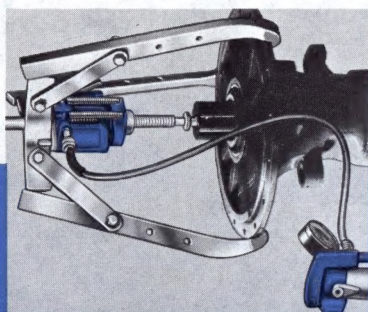
C—SPREAD: 34" max.

No. 1015-LY—3-jaw puller *only* (ram, screw and crank *not* included). Wt. 90 lbs.

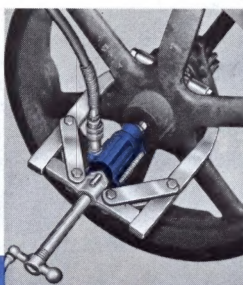
Hydraulic pulling power is used in a wide variety of maintenance operations!



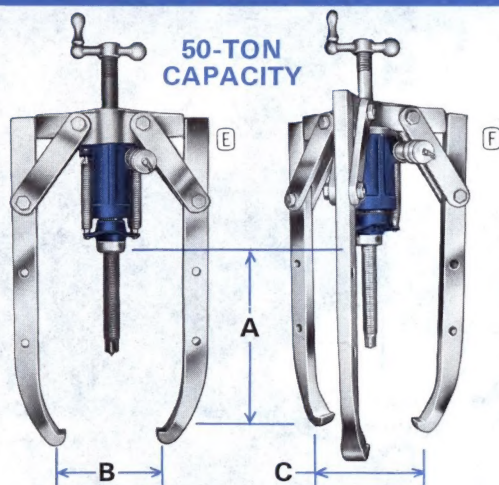
Pulling attachment and step plate are used with 2-jaw puller for bearing cone removal.



3-jaw puller in the process of pushing a shaft from a bearing and housing assembly.



2-jaw puller used with pulling attachment to remove a flywheel from a flywheel shaft.



2-JAW PULLER

(E)

No. 1006-HLY—2-jaw puller with Y50-A hydraulic ram, Y50-12 adjusting screw and Y50-13 adjusting crank. Wt. 180 lbs.

A—REACH: 27" max.

B—SPREAD: 36" max.

SCREW SIZE: 1" x 30" lg.

No. 1006-LY—2-jaw puller *only* (ram, screw and crank *not* included). Wt. 113 lbs.

(F)

No. 1016-HLY—3-jaw puller with Y50-A hydraulic ram, Y50-12 adjusting screw and Y50-13 adjusting crank. Wt. 251 lbs.

A—REACH: 27" max.

C—SPREAD: 44" max.

SCREW SIZE: 1" x 30" lg.

No. 1016-LY—3-jaw puller *only* (ram, screw and crank *not* included). Wt. 184 lbs.



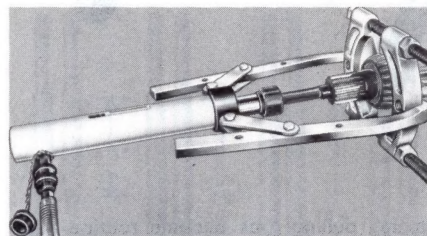
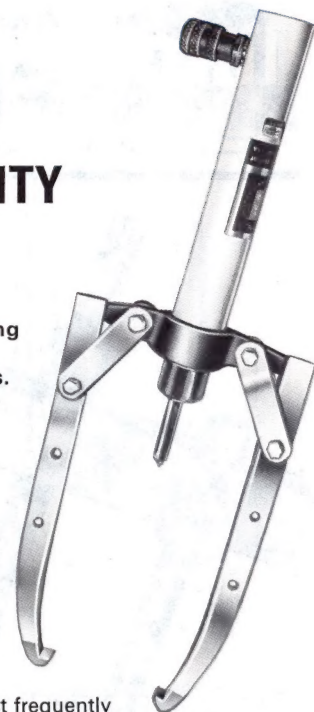
1 1/2" JAW THICKNESS

1 7/8" JAW WIDTH

10-TON CAPACITY PULLER UNIT

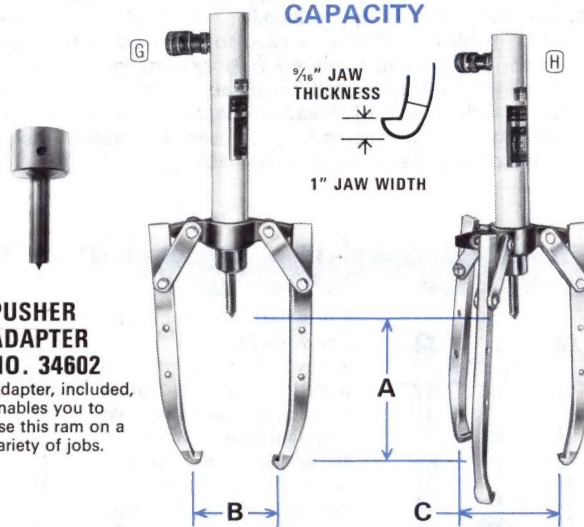
- Plenty of power for pulling gears, bearings, pulleys, other friction-fitted parts.
- Compact in size, easy to use.
- Ram piston has full 10" stroke.

We've combined the proven "Grip-O-Matic" puller design with a single-acting, spring-return ram having a full 10" stroke. The result is a pulling tool with adequate power to handle part removal jobs encountered in service jobs most frequently found in manufacturing facilities.



Here an hydraulic "Grip-O-Matic" puller pulls a tapered roller bearing.

10-TON CAPACITY



PUSHER ADAPTER NO. 34602

Adapter, included, enables you to use this ram on a variety of jobs.

2-JAW PULLER

(G)

No. 1003-HLY—2-jaw puller with hydraulic ram, ram half coupler and pushing adapter. Wt. 26 lbs.

A—REACH: 10" max.

B—SPREAD: 17" max.

No. 1003-LY—2-jaw puller and pushing adapter *only* (ram with half coupler *not* included). Wt. 12 1/4 lbs.

2-3-JAW PULLER

(H)

No. 1013A-HLY—2-3-jaw puller with hydraulic ram, ram half coupler and pushing adapter. Wt. 31 1/2 lbs.

A—REACH: 10" max.

C—SPREAD: 17" max.

No. 1013A-LY—2-3-jaw puller and pushing adapter *only* (ram with half coupler *not* included). Wt. 17 1/4 lbs.

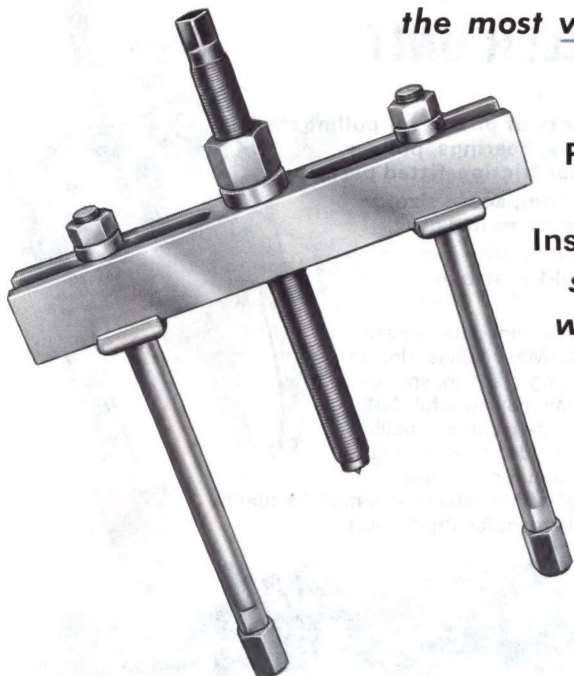
NOTE: Either puller may be used with any single-acting hydraulic ram having 2" -14 straight collar thread and 1 1/4"-11 1/4" NPT piston thread.



T.M.

the Long Line of mechanical PUSH-PULLERS®

Fed. Spec.: GGG-P-00781D



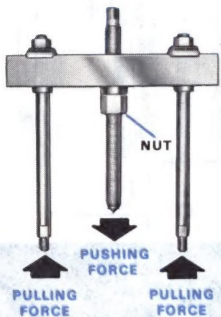
the most versatile puller
ever made!

Removes
and
Installs parts
*safely, easily . . .
without damage!*

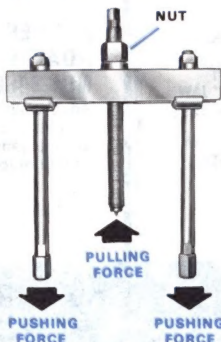
- IN 10, 17 ½ AND 30 TON CAPACITIES!
- WIDE RANGE OF ATTACHMENTS AVAILABLE!

Seemingly "impossible" pulling jobs become routine with an OTC "Push-puller"! Maintenance operations involving the removal and installation of gears, bearings, pulleys, couplings, sprockets, shafts and other press-fitted parts are performed safely . . . quickly . . . without costly damage. The extremely versatile "Push-puller" can be used to apply either pushing or pulling force, depending on how it is set up (see explanation, below). Legs of various lengths are available for each "Push-puller" to obtain any desired, extra-long reach. A wide variety of threaded adapters, bearing pulling attachments and internal pulling attachments may be used with your "Push-puller" to handle most any pulling-installing job imaginable!

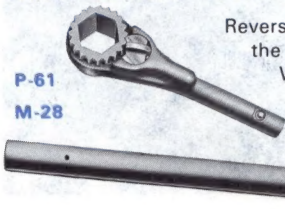
Provides pushing *or* pulling force . . .



For a job in which the screw must *push* (as in removing a gear from a shaft), the forcing nut is installed *beneath* the cross block, as shown at left. To cause the screw to *pull* (as in removing a shaft from a housing), the forcing nut is installed *on top* of the cross block, as shown at right.



RATCHET FOR NO. 938 "PUSH-PULLER"



Reversible ratchet and tubular handle are ideal for turning the 1 ½" hex forcing nut of the No. 938 "Push-puller." Wrench is also usable on hundreds of other maintenance jobs. See page 53 for complete information.

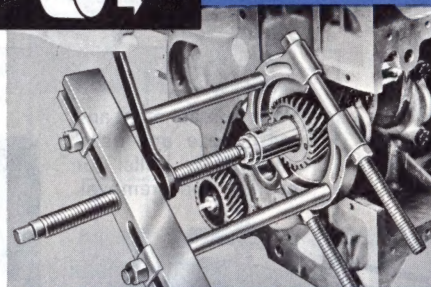
No. P-61—Reversible ratchet. 1 ½" hex opening.
No. M-28—Tubular handle, 24" in length.

3 BASIC PULLING PROBLEMS . . .

1



**PULLING SOME-
THING OFF A
SHAFT**

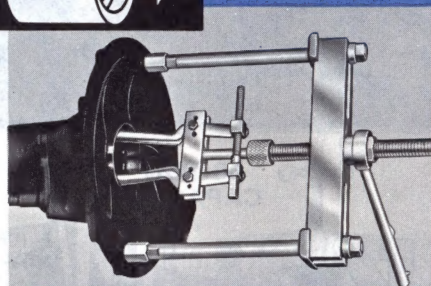


Mechanical "Push-puller" and pulling attachment are shown removing a timing gear from a crankshaft.

2

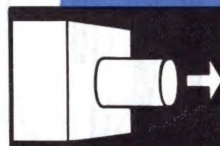


**PULLING SOME-
THING OUT OF
A BORE**

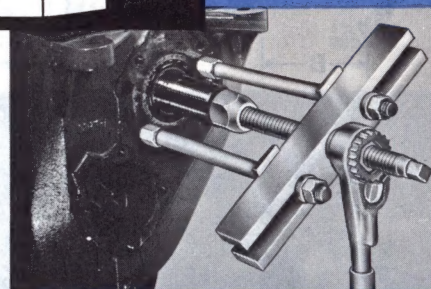


Bearing inner race removed from housing by "Push-puller," in combination with an internal pulling attachment.

3



**PULLING A
SHAFT OUT OF
SOMETHING**



Pulling transmission output shaft. Forcing screw is attached to shaft with threaded adapter. P-61 ratchet used to turn forcing nut.

HOW TO ORDER

The basic considerations for selecting a "Push-puller" are reach, spread and capacity. Determine required dimensions, etc., and select proper puller.

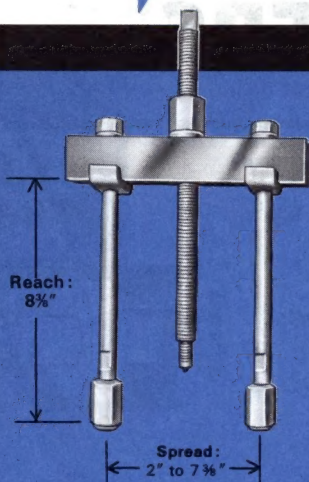
No. 927

Equipped with 927-A
puller legs
(8 3/4" reach)

Use with bearing pulling
attachment No. 951.

Use with pulley pulling
attachment No. 679.

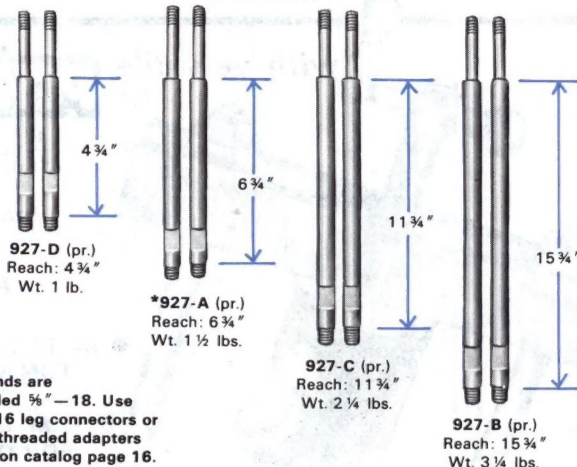
Use with internal pulling
attachments No. 943, 943-A,
943-B and 943-C.



Screw size:
* 3/4" - 16 x 12" lg.
* 1/2" of forcing screw tip-end
is threaded 3/8" - 18.

10 TON Capacity

EXTRA LEGS



Leg ends are
threaded 3/8" - 18. Use
No. 916 leg connectors or
other threaded adapters
listed on catalog page 16.

*Standard legs supplied with 927 puller.

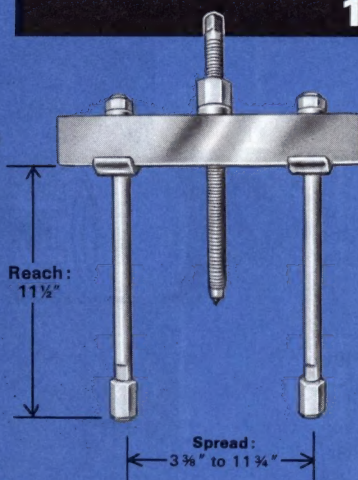
No. 938

Equipped with 930-D
puller legs
(11 1/2" reach)

Use with bearing pulling
attachments No. 952
and 952-A.

Use with pulley pulling
attachments No. 679
and 680.

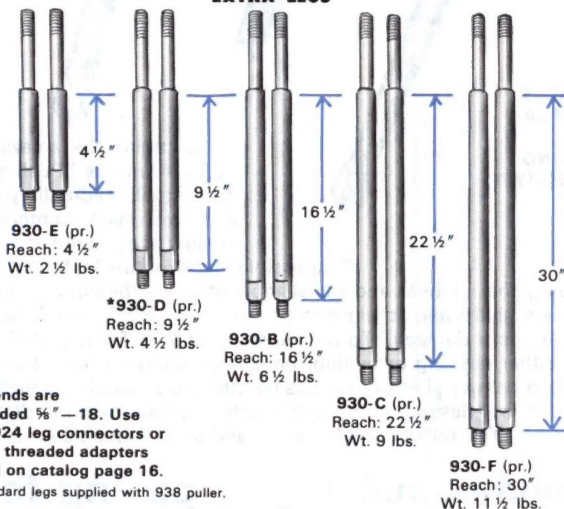
Use with internal pulling
attachments No. 943, 943-A,
943-B and 943-C.



Screw size:
1" - 14 x 13 1/4" lg.

17 1/2 TON Capacity

EXTRA LEGS



Leg ends are
threaded 3/8" - 18. Use
No. 924 leg connectors or
other threaded adapters
listed on catalog page 16.

*Standard legs supplied with 938 puller.

No. 939

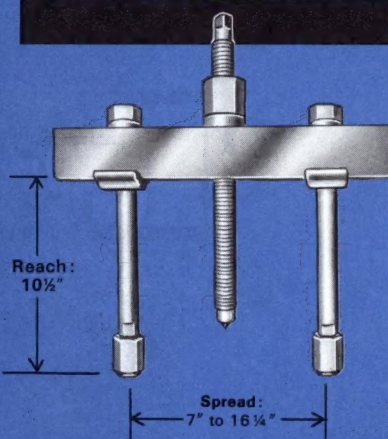
Equipped with 939-A
puller legs
(10 1/2" reach)

Use with bearing pulling
attachments No. 952-D
and 953.

Use with pulley pulling
attachment No. 680.*

*Use two 21-P adapters to
connect attachment to puller.

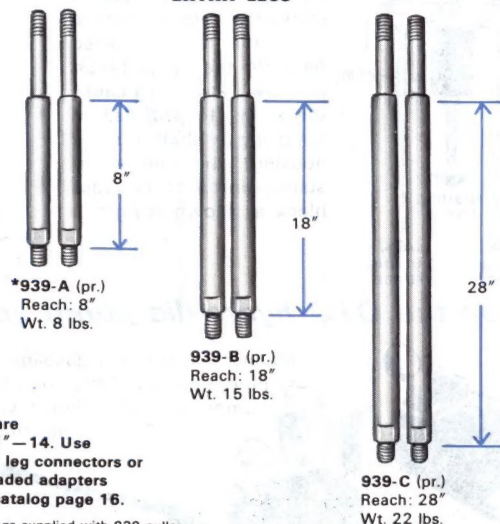
Use with internal pulling
attachment No. 947.



Screw size:
1 1/2" - 12 x 17 1/4" lg.

30 TON Capacity

EXTRA LEGS



Leg ends are
threaded 1" - 14. Use
No. 932-B leg connectors or
other threaded adapters
listed on catalog page 16.

*Standard legs supplied with 939 puller.

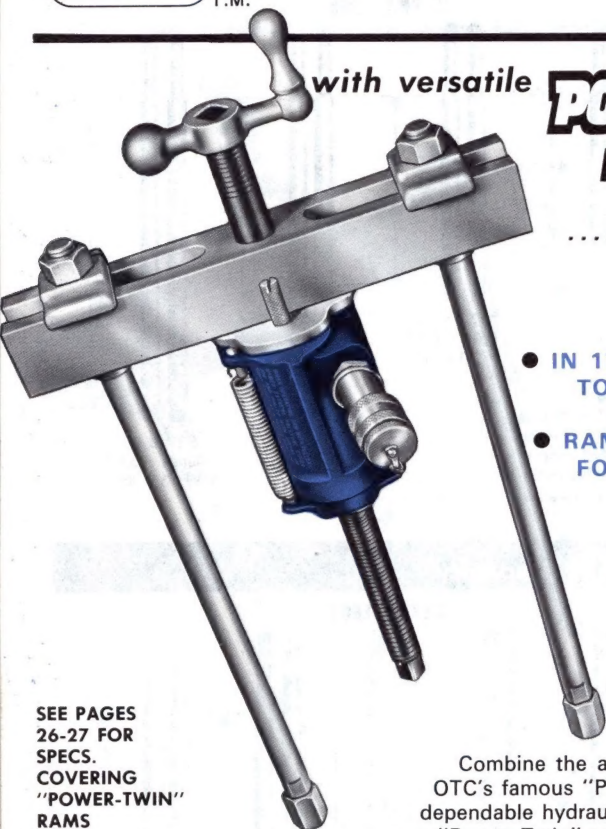
Write for free Booklet No. PS-2, "The OTC Pulling System"



T.M.

the Long Line of hydraulic PUSH-PULLERS®

Fed. Spec.: GGG-P-00781D



with versatile

POWER-TWIN® hydraulics

...remove, install
tight-fitting
parts easily!

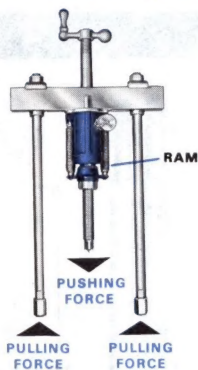
- IN 17 1/2, 30 AND 50 TON CAPACITIES!
- RAM DETACHABLE FOR OTHER USES!
- ELIMINATES TORQUE!

SEE PAGES
26-27 FOR
SPECS.
COVERING
"POWER-TWIN"
RAMS

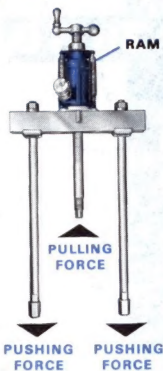
Combine the amazing versatility of OTC's famous "Push-puller" with the dependable hydraulic power offered by a "Power-Twin" center-hole ram ... the result is a pulling tool that makes the

"impossible" jobs routine! Maintenance operations involving the removal and installation of gears, bearings, pulleys, couplings, sprockets, shafts and other press-fitted parts are performed safely ... quickly ... without costly damage. To handle such jobs, a "Push-puller" can be used to apply either pushing or pulling force, depending on how it is set up (see explanation below). Legs of various lengths are available for each "Push-puller" to obtain any desired, extra-long reach. Hydraulic ram is detachable for use with other OTC pullers, shop presses and other equipment.

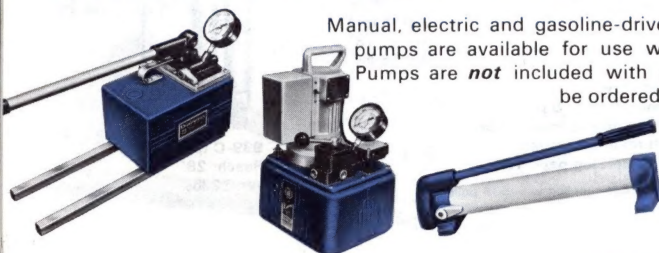
Provides pushing or pulling force ...



For a job in which the screw must **push** (as in removing a gear from a shaft), the ram is installed **beneath** the cross block, as shown at left. To cause the screw to **pull** (as in removing a shaft from a housing), the ram is installed **on top of** the cross block, as shown at right.



Choose the OTC hydraulic pump you need ...



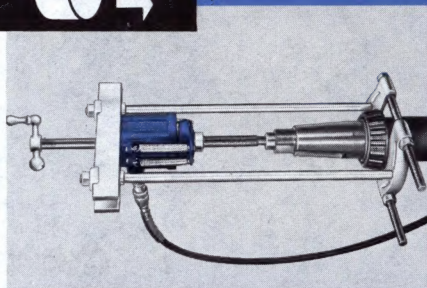
Manual, electric and gasoline-driven OTC hydraulic pumps are available for use with these pullers. Pumps are **not** included with pullers, but must be ordered separately ... see pages 32-41.

3 BASIC PULLING PROBLEMS ...

1

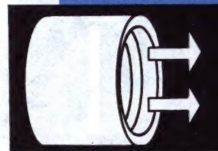


PULLING SOME-
THING OFF A
SHAFT

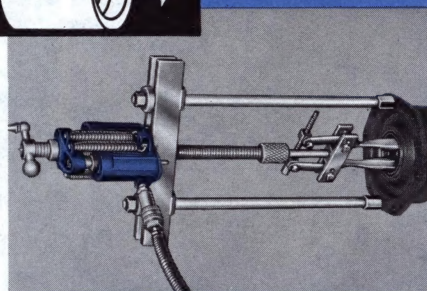


"Push-puller" with long legs provides extra reach needed to remove a bearing from a shaft.

2



PULLING SOME-
THING OUT OF
A BORE

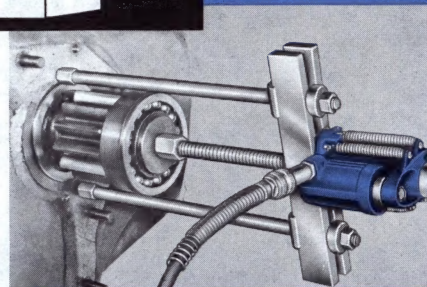


"Push-puller" and internal pulling attachment shown removing a crawler tractor pinion shaft oil seal.

3



PULLING A
SHAFT OUT OF
SOMETHING



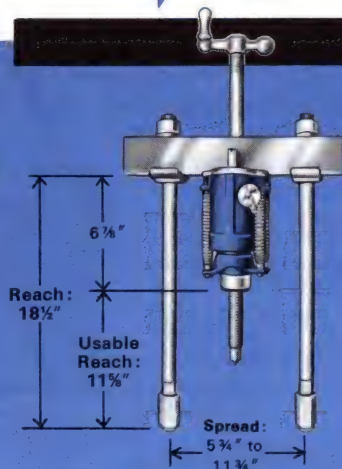
Removing crawler tractor sprocket drive pinion shaft. Puller screw is attached to shaft by threaded adapter.

HOW TO ORDER

The basic considerations for selecting a "Push-puller" are reach, spread and capacity. Determine required dimensions, etc., and select proper puller. Hydraulic hose and pump are **not** supplied with puller... see page 42 to order hose, see pages 32-41 to order pump.

No. 938-HYD

Includes: "Push-puller" with 930-B legs, Y15-A hydraulic ram, Y15-12 adjusting screw (1" - 8 x 20" lg.) and Y15-13 adjusting crank.
Wt. 38 lbs.



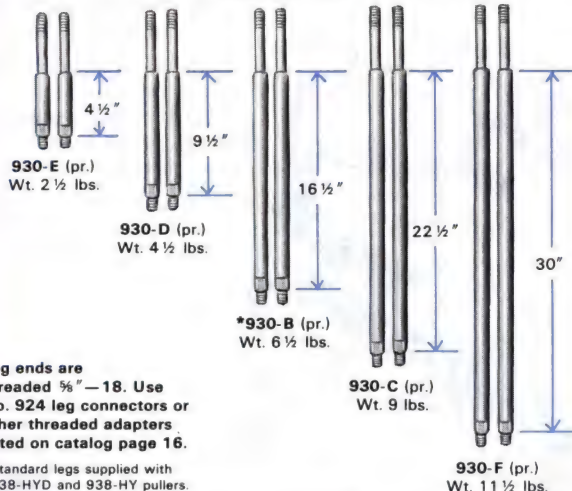
No. 938-HY

Puller **only**... (ram, screw and crank **not** included).
Wt. 22 lbs.

Use with bearing pulling attachments No. 952 and 952-A.
Use with pulley pulling attachments No. 679 and 680.
Use with internal pulling attachment No. 943-E.

17 1/2 TON Capacity

EXTRA LEGS

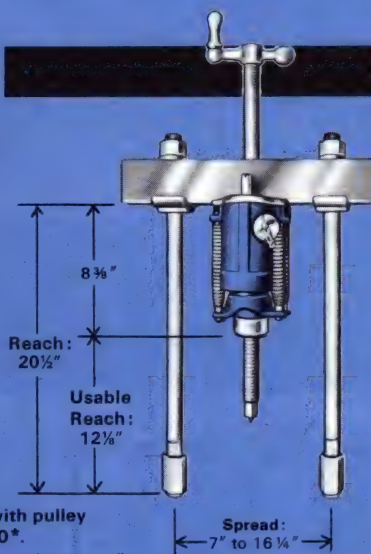


Leg ends are threaded 5/8" - 18. Use No. 924 leg connectors or other threaded adapters listed on catalog page 16.

*Standard legs supplied with 938-HYD and 938-HY pullers.

No. 939-HYD

Includes: "Push-puller" with 939-B legs, Y30-A hydraulic ram, Y30-12 adjusting screw (1 1/4" - 7 x 24" lg.) and Y30-13 adjusting crank.
Wt. 90 lbs.



No. 939-HY

Puller **only**... (ram, screw and crank **not** included).
Wt. 56 lbs.

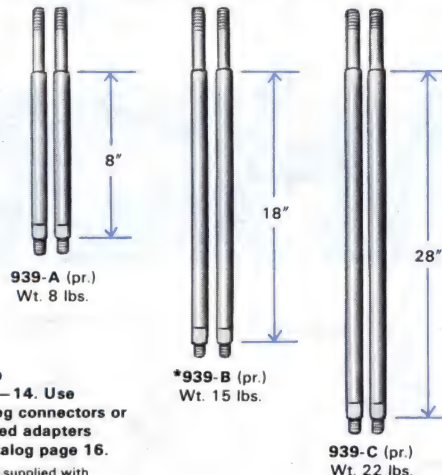
Use with bearing pulling attachments No. 952-D and 953. Use with pulley pulling attachment No. 680*.

*Use two 21-P adapters to connect attachment to puller.

Use with internal pulling attachment No. 947-E.

30 TON Capacity

EXTRA LEGS

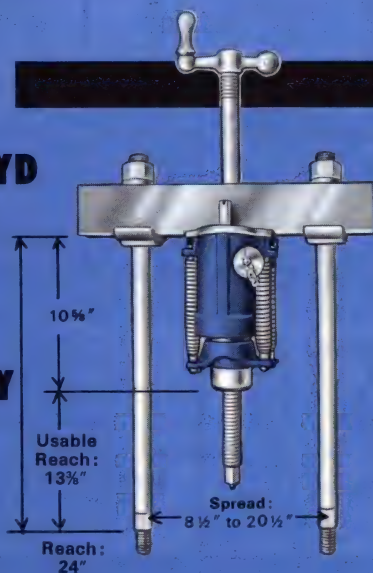


Leg ends are threaded 1" - 14. Use No. 932-B leg connectors or other threaded adapters listed on catalog page 16.

*Standard legs supplied with 939-HYD and 939-HY pullers.

No. 939 1/2-HYD

Includes: "Push-puller" with 939 1/2-A legs, Y50-A hydraulic ram, Y50-12 adjusting screw (1 1/2" - 5 1/2 x 30 3/8" lg.) and Y50-13 adjusting crank.
Wt. 174 lbs.



No. 939 1/2-HY

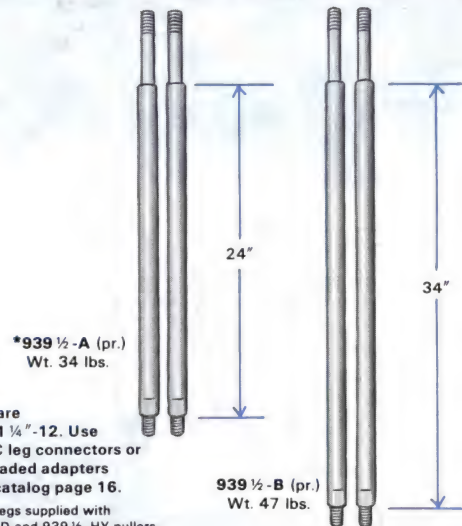
Puller **only**... (ram, screw and crank **not** included).
Wt. 106 lbs.

Use with bearing pulling attachments No. 953-C and 953-D.

SEE PAGE 12 FOR BEARING AND PULLEY PULLING ATTACHMENTS. SEE PAGE 13 FOR INTERNAL PULLING ATTACHMENTS.

50 TON Capacity

EXTRA LEGS



Leg ends are threaded 1 1/4" - 12. Use No. 940-C leg connectors or other threaded adapters listed on catalog page 16.

*Standard legs supplied with 939 1/2-HYD and 939 1/2-HY pullers.



T.M.

the Long Line of versatile

Fed. Spec.: GGG-P-00781D

PULLING ATTACHMENTS

- "Knife-like" edges of OTC pulling attachments assure precision pulling of bearings, other hard-to-grip parts!
- Ideal accessories for hydraulic shop forcing presses!

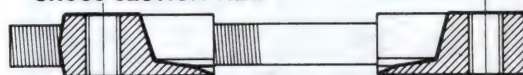
Solve pulling problems where space does not permit hooking puller jaws directly onto part to be pulled . . . "knife-like edges" of attachment may be forced behind part. When used with a "Grip-O-Matic" puller, puller jaws grip attachment's outer edge; when used with a "Push-puller," puller legs are threaded into the attachment's two threaded holes.



Shown being used with hydraulic "Push-puller."



CROSS SECTION VIEW



FLAT BACK SURFACE

"KNIFE-LIKE" EDGES



5/16" - NC

No. 949 1/2

SPREAD: 1/4" to 3/4"
Wt. 3/4 lbs.

Use with puller Nos. 1000, 1000 1/2-L, 1010 1/2-LA.



3/8" - 16

No. 950

SPREAD: 1/2" to 2"
Wt. 1 1/4 lbs.

Use with puller Nos. 1001, 1001-L, 1011-A, 1011 A-L, 515, 515-A.



5/8" - 18

No. 951

SPREAD: 3/4" to 4 1/4"
Wt. 5 lbs.

Use with puller Nos. 1002, 1002-L, 1003-HYL, 1012-A, 1012A-L.



5/8" - 18

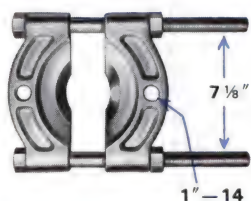
No. 952

SPREAD: 1/2" to 5 1/4"
Wt. 12 lbs.

Use with puller Nos. 1003, 1003-L, 1003 1/2-HYL, 1013-A, 1013A-L, 938.

No. 952-A

SPREAD: 1/2" to 8"
Wt. 12 lbs.

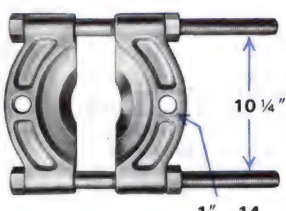


1" - 14

No. 952-D

SPREAD: 1/2" to 8"
Wt. 19 1/2 lbs.

Use with puller Nos. 1003 1/2, 1004, 939.

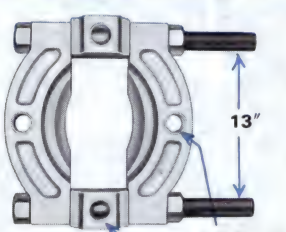


1" - 14

No. 953

SPREAD: 1/2" to 13"
Wt. 41 1/2 lbs.

Use with puller Nos. 1004, 1005, 939.



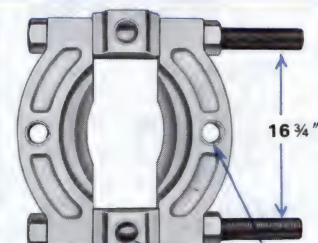
1 3/4" - 12

No. 953-C

SPREAD: 5" to 12 1/2"
Wt. 100 lbs.

Use with puller Nos. 1005, 1006-HYL, 939 1/2-HYD.*

*Use 40-V adapters to connect legs of 939 1/2-HYD puller to puller tees.



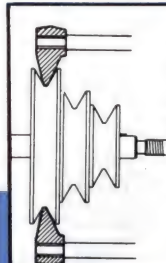
1 3/4" - 12

No. 953-D

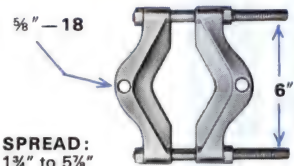
SPREAD: 6" to 16 1/2"
Wt. 197 lbs.

Use with puller Nos. 1006-HYL, 939 1/2-HYD.*

V-BELT PULLEY PULLING ATTACHMENTS



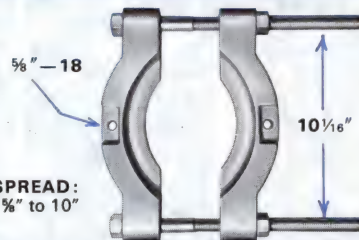
Pull single or multiple-drive V-belt pulleys without damage or distortion. Attachment clamps down into V-groove to distribute pulling load. Used with "Grip-O-Matic" or "Push-pullers."



SPREAD: 1 1/4" to 5"

No. 679

Use with puller Nos. 1002-L, 1003, 927, 938.
Wt. 4 1/2 lbs.



SPREAD: 1" to 10"

No. 680

Use with puller Nos. 1003 1/2, 1003 1/2-HYL, 1004, 938.
Wt. 22 1/2 lbs.



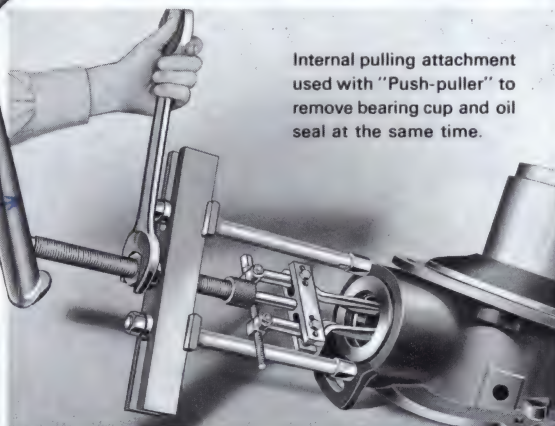
T.M.

the Long Line of *essential* INTERNAL PULLING ATTACHMENTS

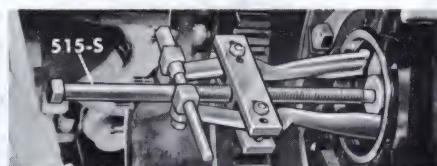
For fast, easy removal of bearing cups, oil seals and bushings from blind holes... may be used with OTC "Push-pullers", slide hammer pullers!

Now... remove bearing cups, oil seals, bushings and other parts from blind holes quickly, without damage to costly parts! OTC internal pulling attachments accomplish these difficult removal jobs the fast, professional way... approved by leading bearing manufacturers. These versatile

attachments will quickly pay for themselves through savings in time, labor. Attachments are adaptable, through adjusting screw and choice of three jaw positions, to fit various diameters. Each attachment is designed for use with a corresponding size of OTC "Push-puller" or slide hammer assembly.



Internal pulling attachment used with "Push-puller" to remove bearing cup and oil seal at the same time.



NO. 515-S PULLER SCREW—Acts as regular forcing screw when threaded directly into block of pulling attachment.

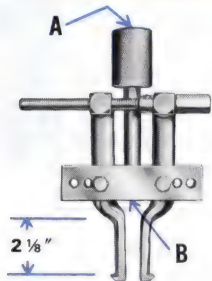
Fed. Spec.: GGG-P-00781D

HOW TO ORDER:

Select the internal pulling attachment having the "reach" and "spread" you require. Also, determine which attachment is used with each OTC "Push-puller" or slide hammer assembly.

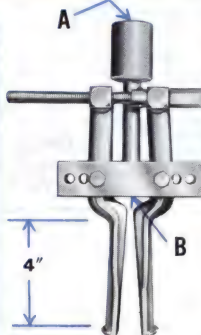
USE THESE ATTACHMENTS WITH
927 & 938 "PUSH-PULLERS", 943-R & 943-S SLIDE HAMMER PULLERS OR 515-S SCREW

USE THIS ATTACHMENT
WITH 939 "PUSH-PULLER"



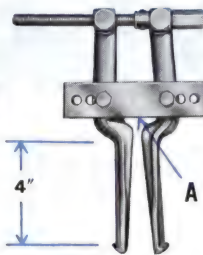
No. 943-C

Jaw spread: 1 1/2" to 5"
"A"... 1" — 14 thd.
"B"... 5/8" — 18 thd.
Wt. 4 1/4 lbs.



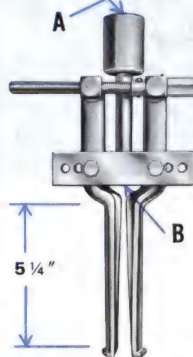
No. 943

Jaw spread: 1 1/2" to 6"
"A"... 1" — 14 thd.
"B"... 5/8" — 18 thd.
Wt. 4 1/2 lbs.



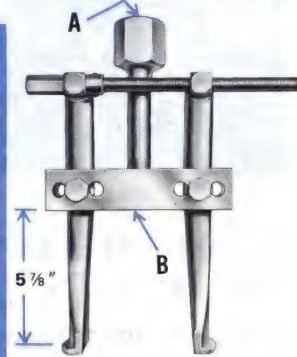
No. 943-B

Jaw spread: 1 1/2" to 6"
"A"... 5/8" — 18 thd.
Wt. 3 1/2 lbs.



No. 943-A

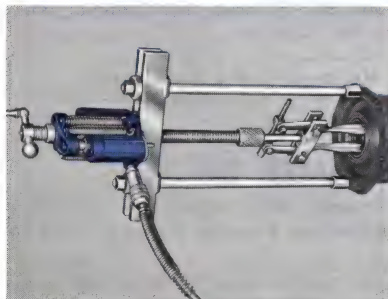
Jaw spread: 1 1/2" to 7"
"A"... 1" — 14 thd.
"B"... 5/8" — 18 thd.
Wt. 4 1/2 lbs.



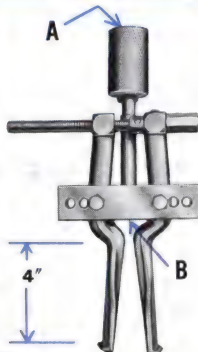
No. 947

Jaw spread: 3" to 9"
"A"... 1 1/2" — 12 thd.
"B"... 1" — 14 thd.
Wt. 13 1/2 lbs.

FOR HYDRAULIC PULLER APPLICATIONS



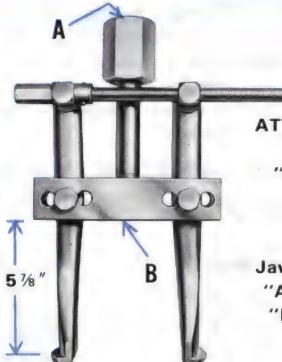
Internal pulling attachment in use with hydraulic "Push-puller."



USE THIS
ATTACHMENT WITH
938-HYD
"PUSH-PULLER"

No. 943-E

Jaw spread: 1 1/2" to 6"
"A"... 1" — 8 thd.
"B"... 5/8" — 18 thd.
Wt. 4 1/2 lbs.



USE THIS
ATTACHMENT WITH
939-HYD
"PUSH-PULLER"

No. 947-E

Jaw spread: 3" to 9"
"A"... 1 1/4" — 7 thd.
"B"... 1" — 14 thd.
Wt. 13 1/2 lbs.



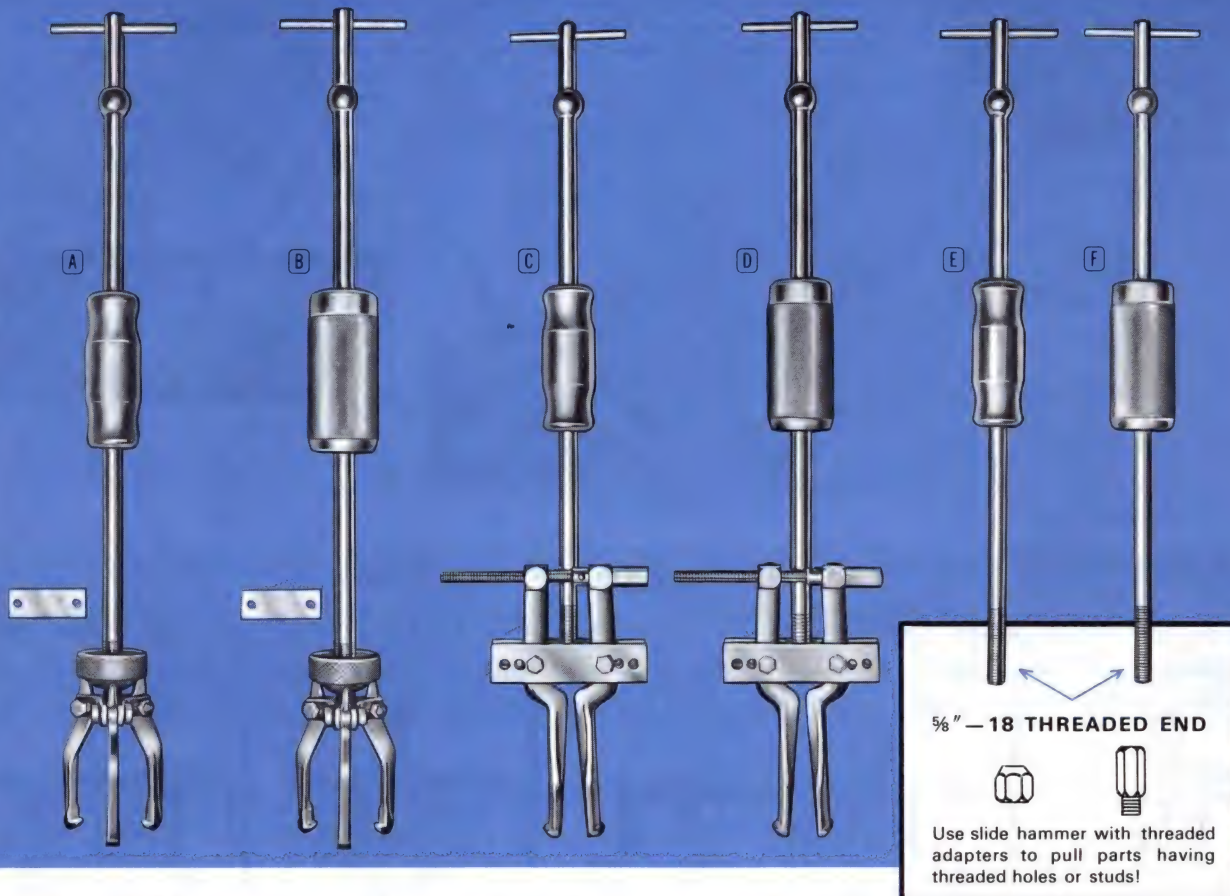
T.M.

the Long Line of versatile

Fed. Spec.: GGG-P-00781D

SLIDE HAMMER PULLERS

- Pull small gears, bearings, oil seals, etc.
- Wide variety of versatile attachments

Whatever your requirement, there's an OTC slide hammer puller to handle it!

REVERSIBLE-JAW SLIDE HAMMER PULLERS OFFER VERSATILITY

Here are two extremely versatile pullers which will accomplish many pulling jobs involving gears, bearings, outer races, grease retainers, oil seals, etc. Either two or three puller jaws may be used, depending on the part to be pulled. Jaws can be positioned to handle "inside" pulling jobs such as bearing cups and outer races, as well as regular "outside" pulling jobs (see page 15 for examples). In addition to these uses, the basic slide hammer unit can be removed from the puller head and jaw assembly and used independently. For example, an OTC bearing cup pulling attachment may be attached to the $\frac{5}{8}$ "—18 threaded end of the basic slide hammer unit. And, female or male-female adapters (listed on page 16) can be used to connect the slide hammer unit to parts having threaded holes or studs, facilitating their easy removal. The No. 960-B slide hammer puller has a 5 lb. hammer, which eases removal of stubborn flange-type axles, bearings, etc. No. 960 has a 2 $\frac{1}{2}$ lb. hammer.

- A** No. 960 — Slide hammer puller with 2 $\frac{1}{2}$ lb. hammer. Wt. 8 lbs.
B No. 960-B — Slide hammer puller with 5 lb. hammer. Wt. 10 $\frac{1}{2}$ lbs.

Puller Nos.	2-Jaw Spread				3-Jaw Spread				Overall Length
	Inside		Outside		Inside		Outside		
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
960, 960-B	1 1/4"	3 3/8"	1"	4 1/2"	1 1/8"	4 3/4"	1 1/2"	4 1/2"	27"

SLIDE HAMMER PULLERS WITH CUP-PULLING ATTACHMENTS

These pullers combine a basic slide hammer unit with a No. 943-B internal pulling attachment (described on page 13). Ideal for removing bearing cups, outer races and oil seals from blind holes. Upon removal of the internal pulling attachment, the basic slide hammer unit, which has a $\frac{5}{8}$ "—18 threaded end, may be used with various adapters for a multitude of pulling jobs.

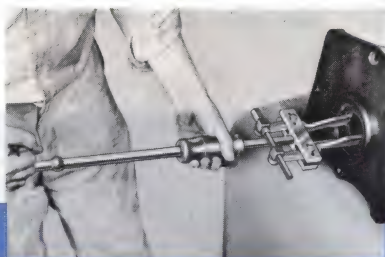
- C** No. 943-T — Slide hammer puller, consisting of: 943-B internal pulling attachment and 943-S basic slide hammer unit, which has 2 $\frac{1}{2}$ lb. hammer. Wt. 9 $\frac{3}{4}$ lbs.
D No. 943-U — Slide hammer puller, consisting of: 943-B internal pulling attachment and 943-R basic slide hammer unit, which has a 5 lb. hammer. Wt. 12 $\frac{1}{4}$ lbs.

Puller Nos.	Min. Spread	Max. Spread	Max. Reach	Overall Length
943-T, 943-U	1 $\frac{1}{2}$ "	6"	4"	28"

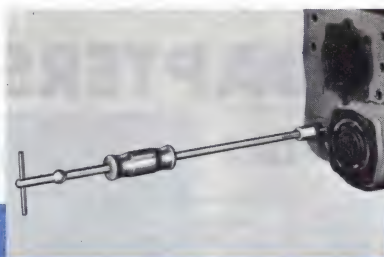
BASIC SLIDE HAMMER UNITS

May be used with an OTC internal pulling attachment (see page 13). Also, with female or male-female threaded adapters (listed on page 16).

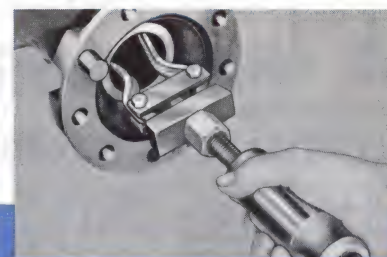
- E** No. 943-S — Basic slide hammer unit with 2 $\frac{1}{2}$ lb. hammer. 24" in length, $\frac{5}{8}$ "—18 threaded end. Wt. 4 $\frac{3}{4}$ lbs.
F No. 943-R — Basic slide hammer unit with 5 lb. hammer. 24" in length, $\frac{5}{8}$ "—18 threaded end. Wt. 7 $\frac{1}{4}$ lbs.



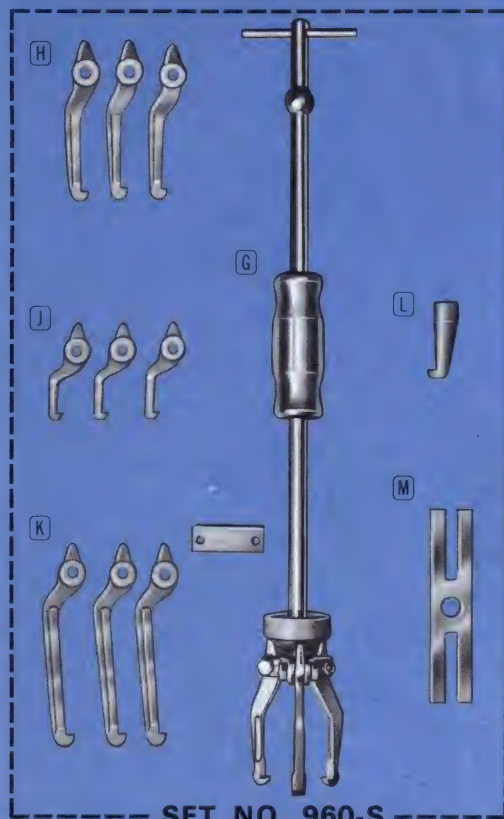
Slide hammer and cup pulling attachment.



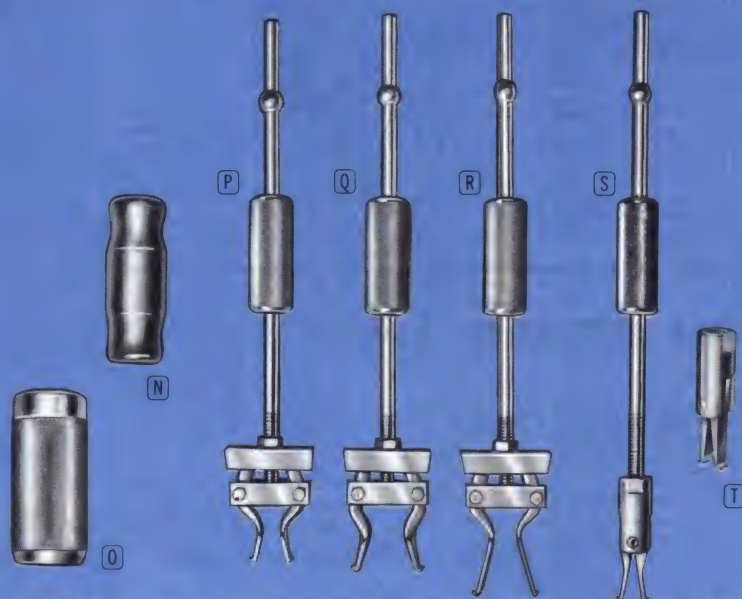
Threaded adapter used with slide hammer.



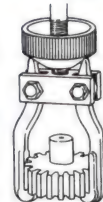
OTC pilot bearing puller shown in use.



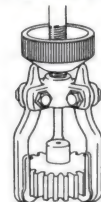
SET NO. 960-S



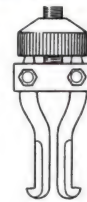
APPLICATION EXAMPLES



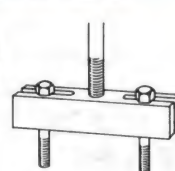
2-Jaw Spread



3-Jaw Spread



Jaws Reversed



Cap screws used with cross block for pulling jobs

SLIDE HAMMER PULLER SET

Introducing a brand-new set containing OTC's popular No. 960 reversible-jaw slide hammer puller, plus an assortment of special jaws and adapters. You get all the versatility of the No. 960 (described fully on page 14), plus attachments for pulling various-size pilot bearings, oil seals, bushings, timing gears, harmonic balancers and other tightly-fitted parts!

No. 960-S—Slide hammer puller set. Wt. 13 3/4 lbs.

SET CONSISTS OF:

- G** No. 960—Reversible-jaw slide hammer puller with 2 1/2 lb. hammer.
- H** No. 960-7—Medium jaw (3 incl.)
- J** No. 960-8—Pilot bearing jaw (3 incl.)
- K** No. 960-9—Long jaw (3 incl.)

Jaw No.	2-jaw Spread				3-jaw Spread			
	Inside		Outside		Inside		Outside	
960-7	1 3/4"	4 3/4"	1"	4 5/8"	2"	3 3/8"	3/4"	4 1/2"
960-8	3/4"	2 3/8"	—	—	1"	3"	—	—
960-9	3 1/4"	5 1/2"	3/4"	7 1/2"	4"	7"	1 1/2"	5 3/4"

- L** No. 960-10—Puller hook. Removes oil seals, bearings, etc.
- M** No. 960-11—Cross block. Removes timing gears, harmonic balancers, pulleys, other parts having tapped holes. Uses cap screws up to 3/8" in diameter. Spread with 3/8" dia. cap screws: 1 7/8"—5 5/8".

SLIDING HAMMERS ONLY

- N** No. 943-S3—2 1/2 lb. sliding hammer only.
- O** No. 943-S4—5 lb. sliding hammer only.

OTC PILOT BEARING PULLERS

These very versatile pullers are built especially for inside pulling jobs, and particularly for removing flywheel pilot bearings on automobiles, trucks and tractors. Also very practical for pulling motor, generator and magneto bearings.

PULLER NO.	REACH	I.D. SPREAD		WT. (lbs.)
		Min.	Max.	
P 954	1"	1/2"	1 1/2"	4 3/8
Q 954-B	1"	7/8"	2"	
R 954-C	2"	1/2"	2"	

SPECIAL SLIDE HAMMER PULLER

Ideal for pulling jobs in very close quarters, as in removal of small-bore bushings, bearings, oil seals, etc. Internal pulling attachment has jaw spread of 1/2" to 1 3/8", adjusted by turning slide hammer handle. Handle end has a 1/2"—20 thread.

- S** No. 957—Slide hammer puller. Wt. 3 1/2 lbs.
- T** No. 959—Internal pulling attachment only. Wt. 3/4 lb.



the Long Line of essential PULLER ADAPTERS

T.M.

Fed. Spec.: GGG-P-00781D

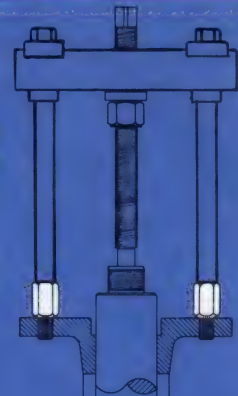
MALE-FEMALE THREADED ADAPTERS

FEMALE END	MALE END	LGTH.	OTC NO.
	1/4"-20		9-M
	3/8"-18		11-M
	1/2"-14		12-M
	3/4"-20		13-M
	1/2"-24		14-M
	3/4"-16		15-M
	1/2"-20		16-M
	1/2"-13		17-M
	3/8"-18		18-M
	1/2"-12		19-M
3/8"-18	3/8"-11	2 1/4"	20-M
	3/4"-16		24-M
	3/4"-10		25-M
	3/4"-14		28-M
	1/2"-9		29-M
	1"-14		32-M
	1/2" pipe		37-M
	1/4" pipe		39-M

FEMALE END	MALE END	LGTH.	OTC NO.
	3/8"-18	3 3/4"	21-P
	3/8"-11		20-P
	3/4"-16	2 1/2"	24-P
	3/4"-10		25-P
1"-14	3/8"-14		28-P
	3/8"-9	2 3/4"	29-P
	1"-8		32-P
	1 1/4"-12		40-P
	1 1/4"-7	3"	41-P
	1 1/4"-12		39-P
1"-8	3/8"-18		32-R
	1"-14	3"	32-S
	1 1/4"-12		32-N
	1 1/4"-5 1/2		32-T
1 1/4"-12	3/8"-10	4"	40-C
	1"-14	4 1/2"	40-R
	1 1/4"-12	4 3/4"	40-V

Used on ends of "Push-puller" legs or with forcing screws, to assist in pulling shafts, bearing caps, pinions and many other parts.

FEMALE END	MALE END	LGTH.	OTC NO.
1 1/4"-7	3/8"-18	4"	41-B
	1"-14		41-R
1 1/4"-5 1/2	1"-8	4"	52-S
	1"-8		52-R

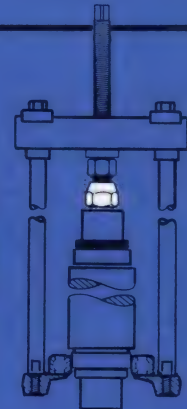
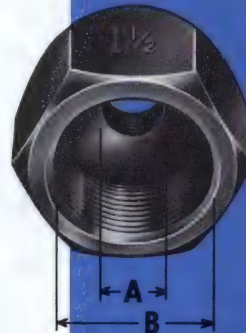


FEMALE THREADED ADAPTERS

FEMALE END-"A"	FEMALE END-"B"	OTC NO.
1/2"-20	3/8"-18	916
	3/8"-18	920
	3/4"-16	924
	7/8"-14	928
3/8"-18	1"-14	932
	1 1/8"-12	936
	1 1/4"-12	940
	1 1/2"-12	948
1"-14	1"-14	932-B
1 1/4"-12	1 1/4"-12	940-C

Set No. 919

The adapters are used on the ends of OTC "Push-puller" forcing screws or legs in the removal and installation of shafts, axles and housings.



STEP PLATE ADAPTERS

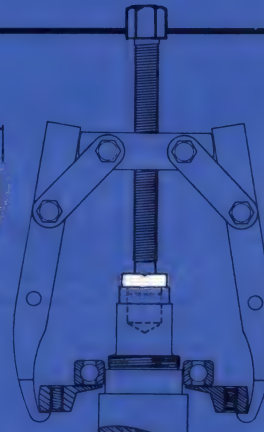
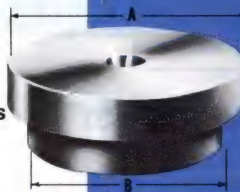
OTC step plate adapters are necessary for pulling and installing bearings, gears or other parts on hollow shafts or housings. Puller screw forces against step plate adapter, as shown at far right. May be used with both OTC "Grip-O-Matic" pullers and "Push-pullers", also with OTC shop presses. Three sets of step plates are available, also.

DIAMETER "A" (in.)	DIAMETER "B" (in.)	OTC NO.
1	3/4	630-1
1 1/4	3/4	630-2
1 1/4	1	630-3
1 3/4	1 1/4	630-4
1 3/4	1 1/4	630-5
1 3/4	1 3/4	630-6
1 3/4	1 1/2	630-7
2	1 3/4	630-8
2 1/4	1 3/4	630-9
2 3/4	1 3/4	630-10
2 1/2	2	630-11
2 3/4	2 1/4	630-12
2 3/4	2 1/4	630-13
2 3/4	2 3/4	630-14
3	2 1/2	630-15
3 1/4	2 3/4	630-16
3 1/2	3	630-17

SET NO. 630-S

SET NO. 630-R

SET NO. 630-T

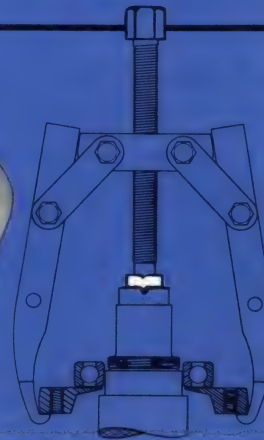


SHAFT PROTECTORS

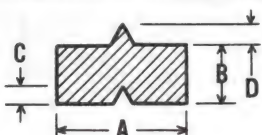
"A"	"B"	"C" (60°)	"D" (60°)	OTC No.
1 1/2"	3/4"	3/8"	3/16"	625-1
1 1/4"	3/4"	3/8"	3/8"	625-2
1"	3/4"	3/8"	3/8"	625-3
3/4"	3/4"	1/4"	1/4"	625-4
3/8"	3/4"	1/4"	1/4"	625-5
3/8"	3/4"	3/16"	3/16"	625-6

SET NO. 625-A

Designed to protect shaft centers from distortion when extreme pressures are applied with OTC "Grip-O-Matic" pullers or "Push-pullers." Shaft protectors are inserted between the end of the puller screw and the shaft.



Set No. 625-A contains all six sizes of shaft protectors listed above.





the Long Line of special-purpose pullers

**3 SETS
AVAILABLE...**

T.M.

Blind-Hole Puller Sets

Removal of bearings, bushings, sleeves and other parts from blind holes can now be accomplished with ease. These new OTC sets provide a selection of expanding collets in various sizes. Collet is placed through bore of part to be removed, then expanded with actuator pin so that lips of collet secure a positive grip for pulling. Force is exerted by means of forcing screw and bridge assembly or slide hammer. Choice of three available sets.

CONTENTS OF SETS:

Part No.	Description	Set No. 981	Set No. 982	Set No. 983
927-2	Forcing Screw	X	X	X
927-3	Forcing Screw Nut	X	X	X
943-S3	Hammer, 2½ Lb.	X		
943-S12	Shank and Tee Bar Assembly	X		
28250	Actuator Pin (⅛" Dia.)	X	X	
28253	Actuator Pin (⅜" Dia.)	X	X	
28256	Actuator Pin (½" Dia.)	X		X
28323	Metal Box	X		
33856	Collet—⅛"	X	X	
33857	Collet—⅜"	X	X	
33858	Collet—⅞"	X	X	
33859	Collet—1"	X	X	
33860	Collet—1 ¼"	X	X	
33861	Collet—1 ½"	X	X	
33862	Collet—1 ¾"	X	X	
33863	Collet—1" to 1 ¼"	X		X
33864	Collet—1 ¼" to 1 ½"	X		X
33865	Collet—1 ½" to 1 ¾"	X		X
41331	Bridge	X	X	X

Pictured above is the "master" set, No. 981, which provides maximum coverage of sizes. Two smaller sets are also available.

*Use with ⅛" actuator pin **Use with ⅜" actuator pin ***Use with ½" actuator pin

other versatile pullers . . .

FLANGE-TYPE PULLER

Quickly and easily pulls harmonic balancers, timing gears and other parts. Works equally well on parts having either two or three tapped holes. Slotted holes in puller body permit cap screws to be positioned to handle bolt-circle diameters from 1 ½" to 4 ½". Includes three cap screws ⅜"—24 NF x 3" long and three cap screws ⅜"—16 NC x 3" long.

A No. 518—Flange-type puller.

2-WAY, 3-WAY PULLER

Removes pulleys, small flywheels. Also ideal for pulling steering wheels of late model cars. Supplied with three pairs of cap screws: ⅜"—16 NC; ⅜"—18 NC and ⅜"—24 NF.

B No. 915-A—2-way, 3-way puller.

GEAR AND PULLEY PULLERS

Ideal for pulling timing gears, fan pulleys, harmonic balancers and many other parts having tapped holes. Each puller includes two hex head cap screws, ⅜"—16 NC x 3" long. Spread range: 1 ½" to 4 ½". Width of puller block: 4 ¾". May also be used with No. 950 pulling attachment (listed on catalog page 12) to remove bearings, etc.

C No. 515—Puller, with 13"-long screw.

D No. 515-A—Puller, with 5 ½"-long screw.

LARGE GEAR AND PULLEY PULLER

Removes parts having tapped holes, such as gears, pulleys, etc. Cap screws are not included with this puller, but any cap screws up to ½" in diameter may be used. Spread range when used with ½" dia. cap screws: 2" to 7 ¾". Puller block is 8 ¼" wide, forcing screw is 11 ¾" long.

E No. 522—Large gear and pulley puller.

CONVEYOR-ROLL BEARING PULLER

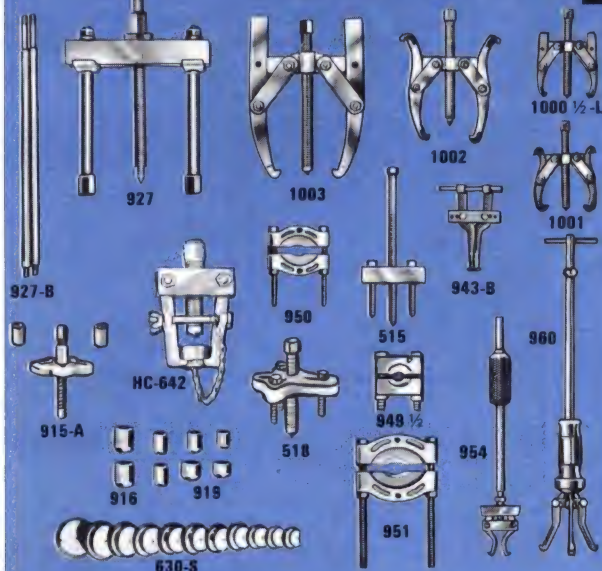
Designed specifically for removing the New Departure bearing from the end of conveyor rolls. Jaws grip the bearing's inside edge. Manual tightening of forcing nut pulls bearing out from end of roller.

F No. 921—Conveyor-roll bearing puller.





T.M.

mechanically-powered maintenance puller sets**for: INDUSTRIAL, AUTOMOTIVE AND
GENERAL SERVICE APPLICATIONS****AUTOMOTIVE****SET NO. PA-23****10-TON Capacity**

Individual items in set are fully described elsewhere in this catalog... consult index.

Includes all of the pullers, attachments, adapters and accessories required to remove gears, bearings, shafts, pinions, bearing outer races and many other tightly fitted parts. This set is suitable for use on all makes and models of automobiles and light trucks, and will not become obsolete with model changes.

SET CONSISTS OF:

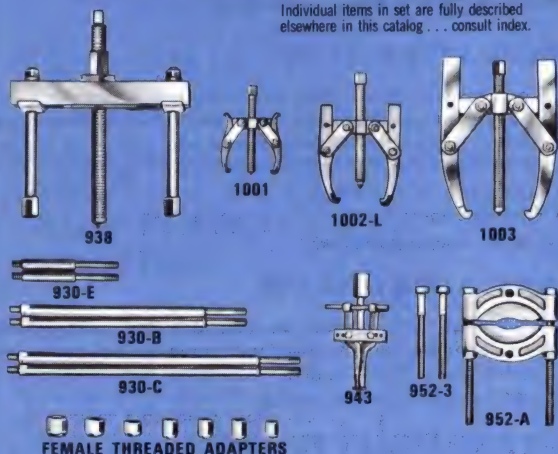
PULLERS	OTC No.	ACCESSORIES	OTC No.
"Push-puller" with 6 3/4" legs	927	Step plate adapter set	630-S
15 3/4" legs for 927 (pr.)	927-B	Female threaded adapter:	
2-jaw "Grip-O-Matic" puller	1000 1/2-L	1/2" - 20 x 3/4" - 18 (2)	916
2-jaw "Grip-O-Matic" puller	1001	Female threaded adapter set	919
2-jaw "Grip-O-Matic" puller	1002	Bearing cup pulling	
2-jaw "Grip-O-Matic" puller	1003	attachment	943-B
Gear and pulley puller	515	Bearing pulling attachment	949 1/2
Flange-type puller	518	Bearing pulling attachment	950
Steering wheel puller	915-A	Bearing pulling attachment	951
Pilot bearing puller	954		
Slide hammer puller	960		
Pitman arm puller	HC-642		

Weight of set: 72 lbs.

No. PA23-B—Board for storing PA-23 set (not included with set). Wt. 24 lbs.

GENERAL SERVICE**SET NO. PE-12****17 1/2-TON Capacity**

Individual items in set are fully described elsewhere in this catalog... consult index.



The versatile pullers and accessories in this set handle parts removal and installation jobs on many makes and models of tractors, power shovels, road-building machinery, trucks, etc. Maintenance operations involving the removal and replacement of gears, bearings, wheels and other press-fitted parts may be performed without damage, and at a substantial saving in time and effort.

SET CONSISTS OF:

PULLERS	OTC No.	ACCESSORIES	OTC No.
"Push-puller" with 9 1/2" legs	938	Female threaded adapters:	
16 1/2" legs for 938 (pr.)	930-B	5/8" - 18 x 3/4" - 16 (2)	924
22 1/2" legs for 938 (pr.)	930-C	5/8" - 18 x 7/8" - 14	928
4 1/2" legs for 938 (pr.)	930-E	5/8" - 18 x 1" - 14	932
2-jaw "Grip-O-Matic" puller	1001	5/8" - 18 x 1 1/4" - 12	936
2-jaw "Grip-O-Matic" puller	1002-L	5/8" - 18 x 1 1/2" - 12	948
2-jaw "Grip-O-Matic" puller	1003	Bearing cup pulling	
		attachment	943
		Bearing pulling attachment	952-A
		Short bolts for 952-A (2)	952-3

ACCESSORIES

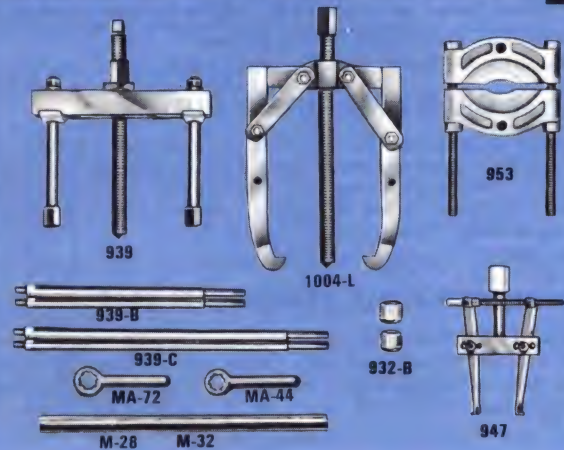
Female threaded adapter:
5/8" - 18 x 5/8" - 18 920

Weight of set: 83 lbs.

No. PE12-B—Board for storing PE-12 set (not included with set). Wt. 25 lbs.

INDUSTRIAL**SET NO. PE20-A****30-TON Capacity**

Individual items in set are fully described elsewhere in this catalog... consult index.



A universal set of pullers and attachments ideal for use on heavy machine tools, turbines, marine engines, mining machinery and other large equipment. Especially recommended for use in railroad shops, mills, factories, shipyards and utility plants. Removal and replacement of large gears, bearings, wheels, pulleys, etc., is possible in a fraction of the time generally required. These tools prevent accidents, eliminate damage to parts and reduce "down-time."

SET CONSISTS OF:

PULLERS	OTC No.	ACCESSORIES	OTC No.
"Push-puller" with 8" legs	939	Bearing cup pulling	
18" legs for 939 (pr.)	939-B	attachment	947
28" legs for 939 (pr.)	939-C	Bearing pulling attachment	953
2-jaw "Grip-O-Matic" puller	1004-L	1 3/4" heavy duty box wrench	
		Used to operate 1004-L puller	MA-44
		2 1/4" heavy duty box wrench	
		Used to operate 939 puller	MA-72
		Tubular handle for wrenches	M-28
		Tubular handle for wrenches	M-32

Weight of set: 208 lbs.

No. PE20-C—Board for storing PE20-A set (not included with set). Wt. 38 lbs.



T.M.

industrial maintenance puller sets

WITH OTC **POWER-TWIN**® HYDRAULICS

OTC puller sets are your best insurance against the day you will need a particular puller for a specific job... every plant and shop needs at least one set. These versatile OTC pullers handle a wide variety of jobs such as removing and installing gears, bearings, wheels, couplings, pulleys, etc. Costly damage to parts is eliminated, puller sets will quickly pay for themselves!

SET NO. Y200-A 17 1/2-TON Capacity

Individual items in set are fully described elsewhere in this catalog... consult index.

SET CONSISTS OF:

HYDRAULIC PUMP

Single-speed hydraulic hand pump assembly Y21-A

PULLERS

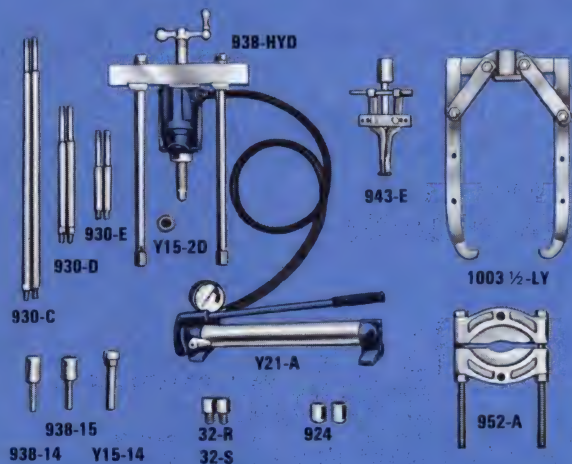
17 1/2-ton capacity hydraulic "Push-puller" with 16 1/2" legs 938-HYD
22 1/2" legs for 938-HYD "Push-puller" (pr.) 930-C
9 1/2" legs for 938-HYD "Push-puller" (pr.) 930-D
4 1/2" legs for 938-HYD "Push-puller" (pr.) 930-E
2-jaw "Grip-O-Matic" puller for use with 17 1/2-ton ram 1003 1/2-LY

ACCESSORIES

Male-female threaded adapter: 1" - 8 F. x 3/8" - 18 M. 32-R
Male-female threaded adapter: 1" - 8 F. x 1" - 14 M. 32-S
Female threaded adapter: 3/8" - 18 x 3/4" - 16 (2 incl.) 924
Pushing adapter 938-14
Pushing adapter 938-15
Bearing cup pulling attachment 943-E
Bearing pulling attachment 952-A
Special plain-hole ram head insert Y15-2D
Jack screw Y15-14

Weight of set: 130 lbs.

No. Y200-B - Board for storing Y200-A set (not included with set). Wt. 31 lbs.



SET NO. Y265-A 30-TON Capacity

Individual items in set are fully described elsewhere in this catalog... consult index.

SET CONSISTS OF:

HYDRAULIC PUMP

Single-speed hydraulic hand pump assembly Y21-A

PULLERS

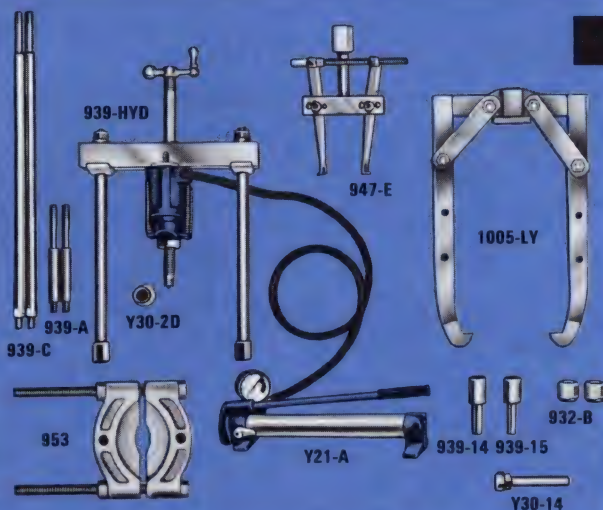
30-ton capacity hydraulic "Push-puller" with 18" legs 939-HYD
8" legs for 939-HYD "Push-puller" (pr.) 939-A
28" legs for 939-HYD "Push-puller" (pr.) 939-C
2-jaw "Grip-O-Matic" puller for use with 30-ton ram 1005-LY

ACCESSORIES

Female threaded adapter: 1" - 14 x 1" - 14 (2 incl.) 932-B
Pushing adapter 939-14
Pushing adapter 939-15
Bearing cup pulling attachment 947-E
Bearing pulling attachment 953
Special plain-hole ram head insert Y30-2D
Jack screw Y30-14

Weight of set: 262 lbs.

No. Y265-B - Board for storing Y265-A set (not included with set). Wt. 48 lbs.



SET NO. Y-285 50-TON Capacity

Individual items in set are fully described elsewhere in this catalog... consult index.

SET CONSISTS OF:

HYDRAULIC PUMP

Single-speed hydraulic hand pump assembly Y21-A

PULLERS

50-ton capacity hydraulic "Push-puller" with 24" legs 939 1/2-HYD
34" legs for 939 1/2-HYD "Push-puller" (pr.) 939 1/2-B
2-jaw "Grip-O-Matic" puller for use with 50-ton ram 1006-LY

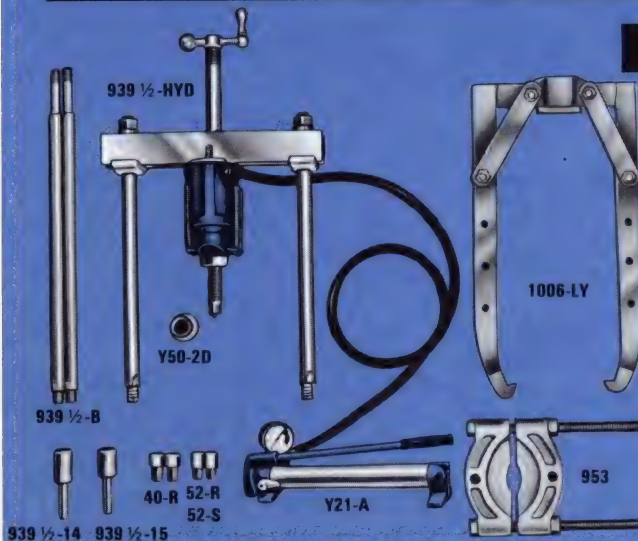
ACCESSORIES

Male-female threaded adapter: 1 1/4" - 12 F. x 1" - 14 M. (2 incl.) 40-R
Male-female threaded adapter: 1" - 5 1/2 F. x 1" - 8 M. 52-R
Male-female threaded adapter: 1" - 5 1/2 F. x 1" - 14 M. 52-S
Pushing adapter 939 1/2-14
Pushing adapter 939 1/2-15
Bearing pulling attachment 953
Special plain-hole ram head insert Y50-2D

*Maximum capacity... 30 ton when used with 939 1/2 hyd. "Push - puller".

Weight of set: 438 lbs.

No. Y285-B - Board for storing Y-285 set (not included with set). Wt. 63 lbs.





T.M.

maintenance puller sets with

- Reduce down-time
- Assure safety
- Save maintenance costs

OTC **POWER-TWIN** HYDRAULICS

17 1/2 TON Capacity

SET NO. Y-1700

INDUSTRIAL

Individual items in set are fully described elsewhere in this catalog... consult index.

SET CONSISTS OF:

HYDRAULIC PUMP

OTC No.

Single-speed hydraulic hand pump assembly..... Y21-A

PULLERS

17 1/2-ton capacity hydraulic "Push-puller" with 16 1/2" legs..... 938-HYD
 22 1/2" legs for 938-HYD (pr.)..... 930-C
 9 1/2" legs for 938-HYD (pr.)..... 930-D
 4 1/2" legs for 938-HYD (pr.)..... 930-E
 3-jaw "Grip-O-Matic" puller for use with 17 1/2-ton ram..... 1013 1/2-LY
 2-jaw head for 1013 1/2-LY..... 1003 1/2-2H
 Combination 2-jaw, 3-jaw "Grip-O-Matic" puller..... 1011-A
 Combination 2-jaw, 3-jaw "Grip-O-Matic" puller..... 1012-A
 Combination 2-jaw, 3-jaw "Grip-O-Matic" puller..... 1013-A

ACCESSORIES

Male-female threaded adapters:
 5/8"-18 F. x 3/4"-16 M. (2)..... 15-M
 5/8"-18 F. x 1/2"-20 M. (2)..... 16-M
 5/8"-18 F. x 1/2"-13 M. (2)..... 17-M
 5/8"-18 F. x 5/8"-11 M. (2)..... 20-M
 5/8"-18 F. x 3/4"-16 M. (2)..... 24-M
 5/8"-18 F. x 3/4"-10 M. (2)..... 25-M

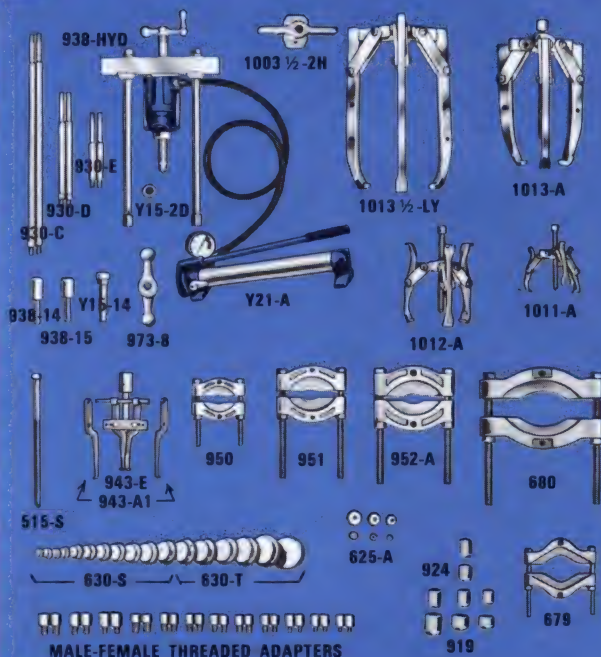
Weight of set: 234 lbs.

No. Y1700-B—Board for storing Y-1700 set (not included with set). Wt. 68 lbs.

ACCESSORIES

OTC No.

Male-female threaded adapters:
 5/8"-18 F. x 3/4"-14 M. (2)..... 28-M
 5/8"-18 F. x 3/4"-9 M. (2)..... 29-M
 5/8"-18 F. x 1"-14 M. (2)..... 32-M
 1"-8 F. x 5/8"-18 M. (2)..... 32-R
 1"-8 F. x 1"-14 M. (2)..... 32-S
 1"-14 F. x 5/8"-18 M. (2)..... 21-P
 Special puller forcing screw..... 515-S
 Shaft protector set..... 625-A
 Step plate adapter set..... 630-S
 Step plate adapter set..... 630-T
 Pulley pulling attachment..... 679
 Pulley pulling attachment..... 680
 Female threaded adapter set..... 919
 Female threaded adapter:
 5/8"-18 x 3/4"-16 (2)..... 924
 Pushing adapter..... 938-14
 Pushing adapter..... 938-15
 Bearing cup pulling attachment..... 943-E
 Long jaws for 943-E (2)..... 943-A1
 Bearing pulling attachment..... 950
 Bearing pulling attachment..... 951
 Bearing pulling attachment..... 952-A
 Puller screw speed nut..... 973-B
 Plain-hole ram head insert..... Y15-2D
 Jack screw..... Y15-14



17 1/2 & 30-TON

SET NO. Y-1730

INDUSTRIAL

Individual items in set are fully described elsewhere in this catalog... consult index.

SET CONSISTS OF:

HYDRAULIC PUMP

OTC No.

Single-speed hydraulic hand pump assembly..... Y21-A

PULLERS

17 1/2-ton capacity hydraulic "Push-puller" with 16 1/2" legs..... 938-HYD
 22 1/2" legs for 938-HYD (pr.)..... 930-C
 9 1/2" legs for 938-HYD (pr.)..... 930-D
 4 1/2" legs for 938-HYD (pr.)..... 930-E
 30-ton capacity hydraulic "Push-puller" with 18" legs..... 939-HYD
 8" legs for 939-HYD (pr.)..... 939-A
 28" legs for 939-HYD (pr.)..... 939-C
 3-jaw "Grip-O-Matic" puller for use with 17 1/2-ton ram..... 1013 1/2-LY
 2-jaw head for 1013 1/2-LY..... 1003 1/2-2H
 3-jaw "Grip-O-Matic" puller for use with 30-ton ram..... 1015-LY
 2-jaw head for 1015-LY..... 1005-2H
 Combination 2-jaw, 3-jaw "Grip-O-Matic" puller..... 1011-A
 Long jaws for 1011-A (3)..... 1001-L1
 Combination 2-jaw, 3-jaw "Grip-O-Matic" puller..... 1012-A
 Long jaws for 1012-A (3)..... 1002-L1
 Combination 2-jaw, 3-jaw "Grip-O-Matic" puller..... 1013-A
 Long jaws for 1013-A (3)..... 1003-L1

ACCESSORIES

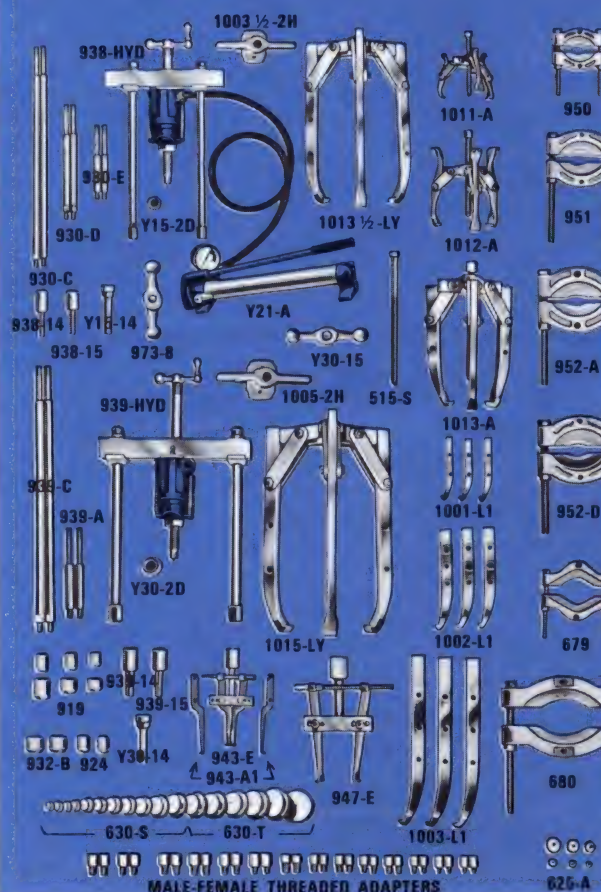
Male-female threaded adapters:
 5/8"-18 F. x 3/4"-16 M. (2)..... 15-M
 5/8"-18 F. x 1/2"-20 M. (2)..... 16-M
 5/8"-18 F. x 1/2"-13 M. (2)..... 17-M
 5/8"-18 F. x 5/8"-11 M. (2)..... 20-M
 5/8"-18 F. x 3/4"-16 M. (2)..... 24-M
 5/8"-18 F. x 3/4"-10 M. (2)..... 25-M
 5/8"-18 F. x 1/2"-14 M. (2)..... 28-M
 5/8"-18 F. x 3/4"-9 M. (2)..... 29-M
 5/8"-18 F. x 1"-14 M. (2)..... 32-M
 1"-8 F. x 5/8"-18 M. (2)..... 32-R
 1"-8 F. x 1"-14 M. (2)..... 32-S
 1"-14 F. x 5/8"-18 M. (2)..... 21-P

Weight of set: 510 lbs.

ACCESSORIES

OTC No.

Male-female threaded adapters:
 1 1/4"-7 F. x 5/8"-18 M. (2)..... 41-B
 1 1/4"-7 F. x 1"-14 M. (2)..... 41-R
 Special puller forcing screw..... 515-S
 Shaft protector set..... 625-A
 Step plate adapter set..... 630-S
 Step plate adapter set..... 630-T
 Pulley pulling attachment..... 679
 Pulley pulling attachment..... 680
 Female threaded adapter set..... 919
 Female threaded adapter:
 5/8"-18 x 3/4"-16 (2)..... 924
 Female threaded adapter:
 1"-14 x 1"-14 (2)..... 932-B
 Pushing adapter for 17 1/2-ton hydraulic ram..... 938-14
 Pushing adapter for 17 1/2-ton hydraulic ram..... 938-15
 Pushing adapter for 30-ton hydraulic ram..... 939-14
 Pushing adapter for 30-ton hydraulic ram..... 939-15
 Bearing cup pulling attachment..... 943-E
 Long jaws for 943-E (2)..... 943-A1
 Bearing cup pulling attachment..... 947-E
 Bearing pulling attachment..... 950
 Bearing pulling attachment..... 951
 Bearing pulling attachment..... 952-A
 Bearing pulling attachment..... 952-D
 Speed nut for 17 1/2-ton puller screw..... 973-B
 Speed nut for 30-ton puller screw..... Y30-15
 Plain-hole ram head insert for 17 1/2-ton ram..... Y15-2D
 Plain-hole ram head insert for 30-ton ram..... Y30-2D
 Jack screw for 17 1/2-ton ram..... Y15-14
 Jack screw for 30-ton ram..... Y30-14





**have the right puller...
when you need it!**

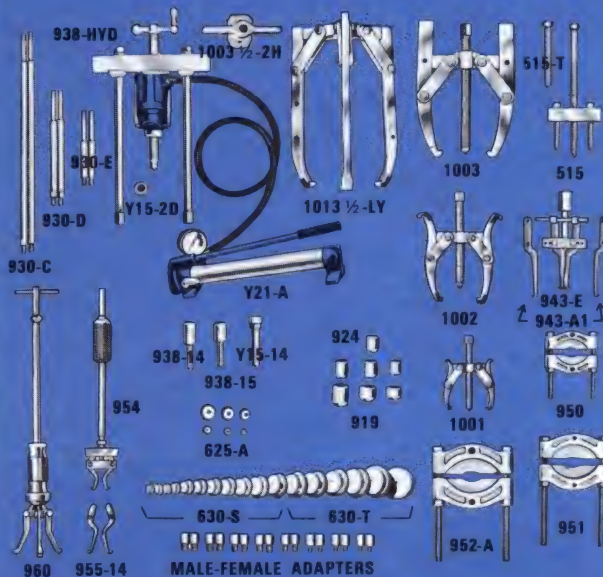
OTC puller sets are your best insurance against the day you will need a particular puller for a specific job... every plant and shop needs at least one set. OTC pullers handle a wide variety of jobs such as removing and installing gears, bearings, wheels, couplings, pulleys, etc. Costly damage to parts is eliminated, sets pay for themselves the first year!

FARM TRACTOR

SET NO. Y-1701

17 1/2 TON Capacity

Mechanical and hydraulic pullers and attachments handle removing-installing jobs on all farm tractor makes and models.



Individual items in set are fully described elsewhere in this catalog... consult index.

SET CONSISTS OF:

HYDRAULIC PUMP	OTC No.	ACCESSORIES	OTC No.
Single-speed hydraulic hand pump assembly.....	Y21-A	Male-female threaded adapters:	
		1/2"-18 F. x 1/2"-13 M. (2)	17-M
		3/4"-18 F. x 3/4"-11 M. (2)	20-M
		1/2"-18 F. x 3/4"-16 M. (2)	24-M
		3/4"-18 F. x 3/4"-10 M. (2)	25-M
		1/2"-18 F. x 1"-14 M. (2)	32-M
		1"-8 F. x 3/4"-18 M.	32-R
		1"-8 F. x 1"-14 M.	32-S
		Shaft protector set	625-A
		Step plate adapter set	630-S
		Step plate adapter set	630-T
		Female threaded adapter set	919
		Female threaded adapter:	
		1/2"-18 x 3/4"-16	924
		Pushing adapter	938-14
		Pushing adapter	938-15
		Bearing cup pulling attachment	943-E
		Long jaws for 943-E (2)	943-A1
		Bearing pulling attachment	950
		Bearing pulling attachment	951
		Bearing pulling attachment	952-A
		Plain-hole ram head insert	Y15-2D
		Jack Screw	Y15-14

ACCESSORIES

Male-female threaded adapters:
1/2"-18 F. x 3/4"-16 M. (2) ... 15-M
3/4"-18 F. x 1/2"-20 M. (2) ... 16-M

Weight of set: 206 lbs.

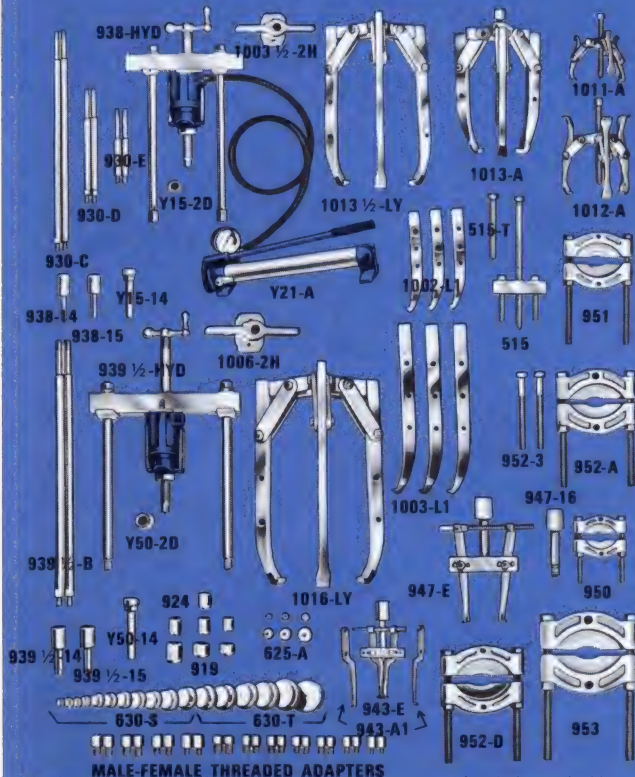
No. Y1701-B—Board for storing Y-1701 set (not included with set). Wt. 68 lbs.

CONSTRUCTION EQUIPMENT AND INDUSTRIAL TRACTOR

Contains both 17 1/2 and 50-ton hydraulic units, necessary adapters and attachments, to accomplish difficult pulling jobs.

SET NO. Y-1750

17 1/2 & 50-TON



Individual items in set are fully described elsewhere in this catalog... consult index.

SET CONSISTS OF:

HYDRAULIC PUMP	OTC No.	ACCESSORIES	OTC No.
Single-speed hydraulic hand pump assembly.....	Y21-A	Male-female threaded adapters:	
		1"-8 F. x 3/4"-18 M.	32-R
		1"-8 F. x 1"-14 M.	32-S
		1"-14 F. x 3/4"-16 M. (2)	24-P
		1 1/4"-12 F. x 1"-14 M. (2)	40-R
		1 1/4"-5 1/2 F. x 1"-8 M.	52-R
		1 1/4"-5 1/2 F. x 1"-14 M.	52-S
		Shaft protector set	625-A
		Step plate adapter set	630-S
		Step plate adapter set	630-T
		Female threaded adapter set	919
		Female threaded adapter:	
		1/2"-18 x 3/4"-16	924
		Pushing adapter for 17 1/2-ton hydraulic ram	938-14
		Pushing adapter for 17 1/2-ton hydraulic ram	938-15
		Pushing adapter for 50-ton hydraulic ram	939 1/2-14
		Pushing adapter for 50-ton hydraulic ram	939 1/2-15
		Bearing cup pulling attachment	943-E
		Long jaws for 943-E (2)	943-A1
		Bearing cup pulling attachment	947-E
		Reducing adapter for use with 947-E	947-16
		Bearing pulling attachment	950
		Bearing pulling attachment	951
		Bearing pulling attachment	952-A
		Short bolts for 952-A (2)	952-3
		Bearing pulling attachment	953
		Bearing pulling attachment	953
		Plain-hole ram head insert for 17 1/2-ton ram	Y15-2D
		Plain-hole ram head insert for 50-ton ram	Y50-2D
		Jack screw for 17 1/2-ton ram	Y15-14
		Jack screw for 50-ton ram	Y50-14
		*Maximum capacity ... 30 ton when used with 939 1/2 hyd. "Push-puller"	

ACCESSORIES

Male-female threaded adapters:
1/2"-18 F. x 3/4"-16 M. (2) ... 15-M
3/4"-18 F. x 1/2"-20 M. (2) ... 16-M
1/2"-18 F. x 3/4"-13 M. (2) ... 17-M
3/4"-18 F. x 3/4"-11 M. (2) ... 20-M
1/2"-18 F. x 3/4"-16 M. (2) ... 24-M
3/4"-18 F. x 3/4"-10 M. (2) ... 25-M
1/2"-18 F. x 1"-14 M. (2) ... 32-M

Weight of set: 749 lbs.



T.M.

the most complete industrial puller set available!

- Contains 17½, 30 and 50-ton hydraulic components! • A puller size for every job!
- Set handles 99% of all industrial maintenance pulling jobs!

17½, 30 & 50-TON SET NO. Y-1735 INDUSTRIAL

This "Master Set" includes 17½, 30 and 50-ton hydraulics, plus an extensive assortment of pullers, attachments and adapters.

SET CONSISTS OF:

HYDRAULIC PUMPS, HOSE, ETC.

Single-speed hydraulic hand pump assembly	Y21-A
Two-speed hydraulic hand pump with two-way control valve	Y29A-2-C
Gauge for use with Y29A-2-C	Y1-A
Hydraulic hose; 6', ¾" NPT ends (For use with Y29A-2-C)	Y21-2
Female half coupler (For use with Y29A-2-C)	Y25-3

PULLERS

17½-ton capacity hydraulic "Push-puller" with 16½" legs	938-HYD
22½" legs for 938-HYD "Push-puller" (pr.)	930-C
9½" legs for 938-HYD "Push-puller" (pr.)	930-D
4½" legs for 938-HYD "Push-puller" (pr.)	930-E
30-ton capacity hydraulic "Push-puller" with 18" legs	939-HYD
8" legs for 939-HYD "Push-puller" (pr.)	939-A
28" legs for 939-HYD "Push-puller" (pr.)	939-B
50-ton capacity hydraulic "Push-puller" with 24" legs	939½-HYD
34" legs for 939½-HYD "Push-puller" (pr.)	939½-B
3-jaw "Grip-O-Matic" puller for use with 17½-ton ram	1013½-LY
2-jaw head for 1013½-LY "Grip-O-Matic" puller	1003½-2H
3-jaw "Grip-O-Matic" puller for use with 30-ton ram	1015-LY
2-jaw head for 1015-LY "Grip-O-Matic" puller	1005-2H
3-jaw "Grip-O-Matic" puller for use with 50-ton ram	1016-LY
2-jaw head for 1016-LY "Grip-O-Matic" puller	1006-2H
Combination 2-jaw, 3-jaw "Grip-O-Matic" puller	1011-A
Long jaws for 1011-A "Grip-O-Matic" puller (3)	1001-L1
Combination 2-jaw, 3-jaw "Grip-O-Matic" puller	1012-A
Long jaws for 1012-A "Grip-O-Matic" puller (3)	1002-L1
Combination 2-jaw, 3-jaw "Grip-O-Matic" puller	1013-A
Long jaws for 1013-A "Grip-O-Matic" puller (3)	1003-L1

ACCESSORIES

Male-female threaded adapters:

¾" - 18 F. x ¾" - 16 M. (2)	15-M
¾" - 18 F. x ½" - 20 M. (2)	16-M
¾" - 18 F. x ½" - 13 M. (2)	17-M
¾" - 18 F. x ¾" - 11 M. (2)	20-M
¾" - 18 F. x ¾" - 16 M. (2)	24-M
¾" - 18 F. x ¾" - 10 M. (2)	25-M
¾" - 18 F. x ¾" - 14 M. (2)	28-M
¾" - 18 F. x ¾" - 9 M. (2)	29-M
¾" - 18 F. x 1" - 14 M. (2)	32-M
1" - 8 F. x ¾" - 18 M. (2)	32-R
1" - 8 F. x 1" - 14 M. (2)	32-S
1" - 14 F. x ¾" - 18 M. (2)	21-P
1 ¼" - 7 F. x ¾" - 18 M. (2)	41-B
1 ¼" - 7 F. x 1" - 14 M. (2)	41-R
1 ¼" - 12 F. x 1" - 14 M. (2)	40-R
1 ¼" - 12 F. x 1 ¼" - 12 M. (2)	40-V
1 ½" - 5 ½ F. x 1" - 8 M. (2)	52-R
1 ½" - 5 ½ F. x 1" - 14 M. (2)	52-S
Special puller forcing screw	515-S
Shaft protector set	625-A
Step plate adapter set	630-S
Step plate adapter set	630-T
Pulley pulling attachment	679
Pulley pulling attachment	680
Female threaded adapter set	919
Female threaded adapter: ¾" - 18 x ¾" - 16 (2)	924
Female threaded adapter: 1" - 14 x 1" - 14 (2)	932-B
Pushing adapter for 17½-ton hydraulic ram	938-14
Pushing adapter for 17½-ton hydraulic ram	938-15
Pushing adapter for 30-ton hydraulic ram	939-14
Pushing adapter for 30-ton hydraulic ram	939-15
Pushing adapter for 50-ton hydraulic ram	939½-14
Pushing adapter for 50-ton hydraulic ram	939½-15
Bearing cup pulling attachment	943-E
Long jaws for 943-E bearing cup pulling attachment (2)	943-A1
Bearing cup pulling attachment	947-E
Reducing adapter for use with 947-E	947-16
Bearing pulling attachment	950
Bearing pulling attachment	951
Bearing pulling attachment	952-A
Bearing pulling attachment	952-D
Bearing pulling attachment	953
Bearing pulling attachment	953-C
Bearing pulling attachment	953-D
Speed nut for 17½-ton puller screw	973-B
Speed nut for 30-ton puller screw	Y30-15
Speed nut for 50-ton puller screw	Y50-15
Plain-hole ram head insert for 17½-ton ram	Y15-2D
Plain-hole ram head insert for 30-ton ram	Y30-2D
Plain-hole ram head insert for 50-ton ram	Y50-2D
Jack screw for 17½-ton ram	Y15-14
Jack screw for 30-ton ram	Y30-14
Jack screw for 50-ton ram	Y50-14

Weight of set: 1,353 lbs.

Individual items in set are fully described elsewhere in this catalog... consult index.



MALE-FEMALE THREADED ADAPTERS



the Long Line of universal

Bushing, Bearing and Seal Driver Sets

T.M.



TOOL ORGANIZER BOARD

No. 27810—Keeps set contents in proper order, safe from loss. Not included with sets . . . must be ordered separately.

• At your fingertips . . .

the right-size driver for any installing job!

• Install parts properly and without damage!



Sets provide interchangeable discs and handles you use to "make up" a driver tool that's perfect for the job. Discs can be assembled to provide a pilot (to prevent cocking), a spacer (so force will be applied only on the proper area) and a driver (providing even distribution of force). Oil seals, bearings, bushings and other parts are installed without damage, and you save plenty of time, too! Size range: 1/2" dia. through 4 1/2" dia. in 1/16" increments. Choose the set that suits your present needs. In the future, you can expand coverage by ordering additional discs . . . see Bulletin BD-69.

ORDER THE SET THAT MEETS YOUR NEEDS BEST . . .

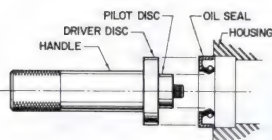
"STARTER" SET NO. 27794—Wide coverage, low investment! Includes 41 discs and two handles. Size range of 1/2" through 3" dia.

"BIG JOB" SET NO. 27795—Used for servicing large components. You get coverage of 3 1/8" through 4 1/2" dia., with the 24 discs and handle provided.

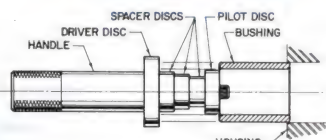
"INTERMEDIATE" SET NO. 27796—An ideal automotive set. Includes a handle, plus 25 discs having a range of 2" through 3 1/2" dia.

"MASTER" SET NO. 27797—For maximum coverage. Three sizes of handles and 65 discs are included to cover a range of 1/2" through 4 1/2" dia.

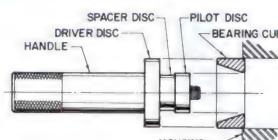
Typical disc and handle arrangements:



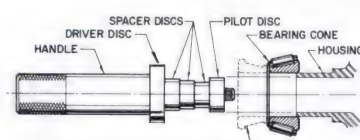
Installing oil seal in housing is easily accomplished here.



Pilot disc prevents cocking as bushing is installed with tool.



Bearing cup driven into housing. Alignment is maintained.



Here, a bearing cone is being installed on a shaft correctly.

SEE OTC BULLETIN NO. BD-69 FOR ADDITIONAL INFORMATION!

BUSHING DRIVER SETS

A No. 818—Bushing driver set. Removes and installs bushings in tie rods, spindles, water pumps, con rods, pistons, etc. Includes complete range of driving collars and two mandrels, packed in plastic box. Contents of set:

Collar No.	Bushing I.D.	Bushing O.D.	Collar No.	Bushing I.D.	Bushing O.D.	Collar No.	Bushing I.D.	Bushing O.D.
26569	9/16"	3/4"	26588	1 1/16"	1 1/8"	26594	1 1/8"	1 1/2"
26572	5/8"	1 1/16"	26589	3/4"	1"	813	Driving Mandrel for 26569 to 26587	
26584	5/8"	3/4"	26590	7/8"	1 1/16"	814	Driving Mandrel for 26588 to 26594	
26585	1 1/16"	1 1/8"	26591	1 1/8"	1 1/4"	14701	Plastic Box	
26586	23/32"	27/32"	26592	1"	1 1/8"			
26587	3/4"	7/8"	26593	1 1/16"	1 1/8"			

B No. T-818—Bushing driver set. Heavy-duty set removes and installs bushings on trucks, tractors, other heavy equipment. Includes six driving collars and driving mandrel, contained in plastic box. Contents of set:

Collar No.	Bushing I.D.	Bushing O.D.	Collar No.	Bushing I.D.	Bushing O.D.	No.	
T-806	1 1/16"	1 1/8"	T-809	1 3/8"	1 1/2"	815	Driving Mandrel
T-807	1 1/4"	1 1/2"	T-810	1 1/8"	1 1 1/16"		
T-808	1 1/8"	1 1/4"	T-811	1 1/2"	1 3/4"	14701	Plastic Box



OWATONNA TOOL COMPANY
OWATONNA, MINNESOTA 55060, U.S.A.

FOR PARTS INFORMATION, SEE
OTC PARTS CATALOG



T.M.

the Performance Line of hydraulic RAM/PUMP SETS

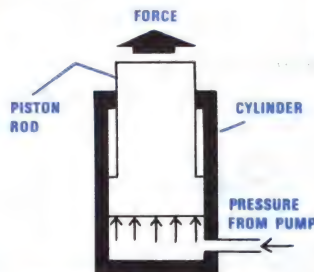
Fed. Spec.: GGG-J-63b

- Pre-selected hydraulic power packages
- For maintenance, production and construction applications
- Choose from a wide range of ram and pump types and capacities

PUSH-TYPE RAMS

with spring or gravity return . . .

Compact and lightweight, these single-acting "YS"-series rams are ideal for use in hydraulic jigs, fixtures, presses and in many other lifting, pushing or clamping applications. Require a minimum of mounting space, and remote operation is facilitated by the 6' high-pressure hose. Ram-pump-hose sets are available in 4 to 50-ton capacities.

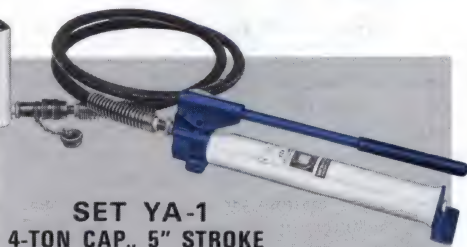


Push-type "YS"-series rams apply force in a single direction. Spring or gravity return is featured.

Set Nos. YA-1 thru YA-5 feature popular OTC single-speed hydraulic hand pumps. Sets YA-6 and YA-7 include the Y22-3 two-speed hand pump, which provides fast piston rod approach. Pump automatically shifts to high-pressure stage when load is encountered.

FOR RAM, PUMP AND HOSE SPECIFICATIONS . . .

See pages 26-30 for ram specifications. Refer to pages 31 and 32 for hand pump specifications. Consult page 42 for hose and coupler descriptive data.



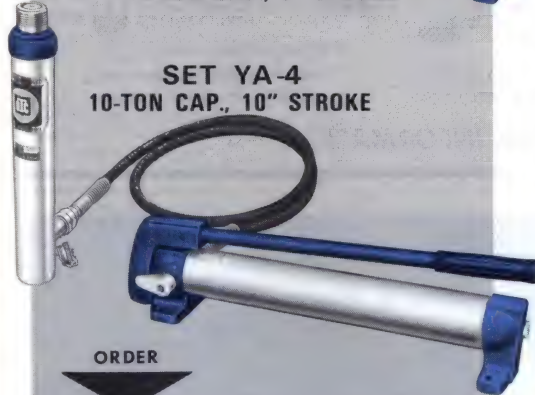
SET YA-1
4-TON CAP., 5" STROKE



SET YA-2
10-TON CAP., 2 1/4" STROKE



SET YA-3
10-TON CAP., 6" STROKE



SET YA-4
10-TON CAP., 10" STROKE



SET YA-5
20-TON CAP., 5" STROKE



SET YA-6
20-TON CAP., 13 1/2" STROKE

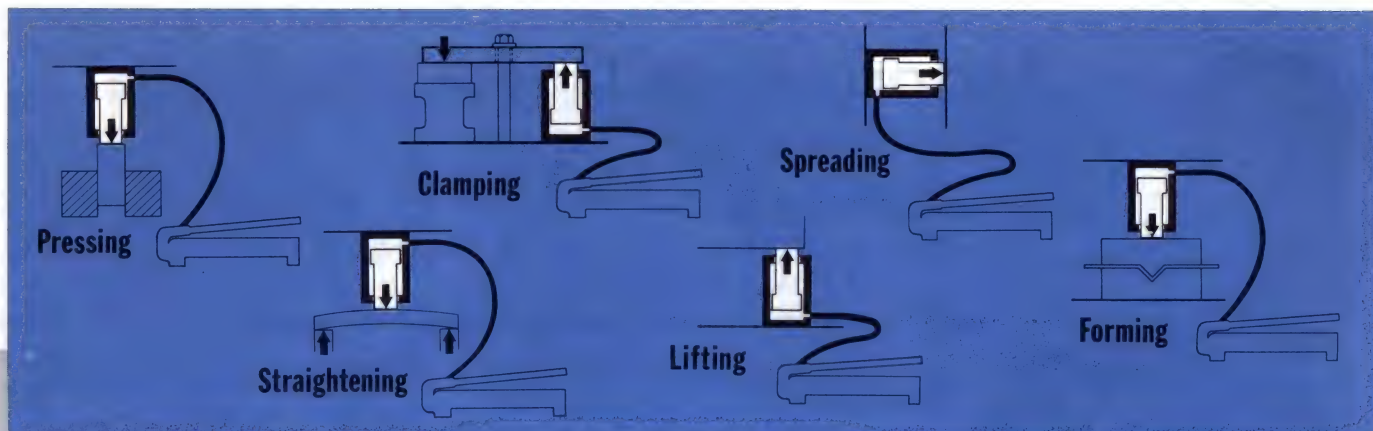


SET YA-7
50-TON CAP., 6" STROKE

ORDER

OTC Set No.	Capacity (tons)	Cylinder Stroke	Cylinder Collapsed Height	Handle Strokes Req'd to Obtain Full Cyl. Stroke	Cylinder No.	Pump No.	Hose No.	Hose Coupler No.	Pump Speed	Weight (lbs.)
YA-1	4	5"	10 1/2"	72	YS-101A	Y-20	Y21-5	Y25A-3	Single	13
YA-2	10	2 1/4"	5 1/16"	32	YS-105A	Y21-1	Y21-2	Y25-3	Single	27 1/2
YA-3	10	6"	11 1/2"	85	YS-106A	Y21-1	Y21-2	Y25-3	Single	31 1/2
YA-4	10	10"	15 1/2"	140	YS-107A	Y21-1	Y21-2	Y25-3	Single	35 1/2
YA-5	20	5"	10 1 1/16"	166	YS-112A	Y21-1	Y21-2	Y25-3	Single	41 1/2
YA-6	20	13 1/2"	20"	240*	YS-113A	Y22-3	Y21-2	Y25-3	Two	59 1/2
YA-7	50	6"	10 3/8"	240*	YS-120A	Y22-3	Y21-2	Y25-3	Two	84 1/2

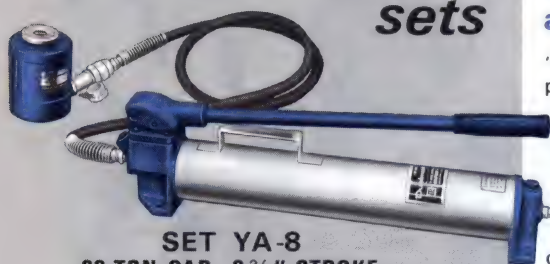
*Based on 50% of the stroke being made in the low-pressure stage, 50% in the high-pressure stage.



"Shorty" RAM sets

compact in size,
and versatile in
application . . .

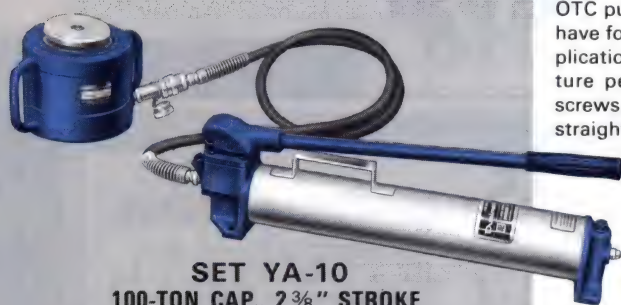
"Shorty" Rams provide lifting or pushing force in limited working space . . . countless applications in industry, construction, house-moving, etc. Unique head tilts 10° to reduce off-center loading tendencies. Visual centering of load is simplified by a concentric ring pattern on the piston top. Three single-acting, manual-return models are available, in 30, 50 and 100-ton capacities. Two-speed Y22-3 hand pump gives fast piston rod approach.



SET YA-8
30-TON CAP., 2 3/8" STROKE



SET YA-9
50-TON CAP., 2 3/8" STROKE



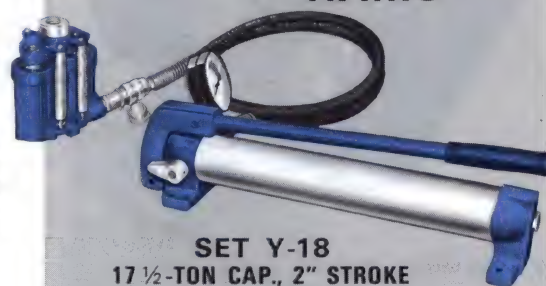
SET YA-10
100-TON CAP., 2 3/8" STROKE

POWER-TWIN® RAMS

Originally designed for use with OTC pullers, "Power-Twin" rams have found hundreds of other applications! The center-hole feature permits extending jacking screws, cables, puller screws, etc., straight through the ram. Compared to the force they develop, these single-acting, spring-return units are compact and lightweight. Ideal for maintenance work and production jobs having restricted working space.

"Power-Twin" sets are available in three capacities.

POWER-TWIN® RAMS



SET Y-18
17 1/2-TON CAP., 2" STROKE



SET Y-33
30-TON CAP., 2 1/2" STROKE



SET Y-53
50-TON CAP., 3" STROKE

ORDER

OTC Set No.	Capacity (tons)	Cylinder Stroke	Cylinder Collapsed Height	Handle Strokes Req'd to Obtain Full Cyl. Stroke	Cylinder No.	Pump No.	Hose No.	Hose Coupler No.	Gauge No.	Pump Speed	Weight (lbs.)
YA-8	30	2 3/8"	5 3/16"	55*	YS-63A	Y22-3	Y21-2	Y25-3	—	Two	40
YA-9	50	2 3/8"	5 5/16"	94*	YS-64A	Y22-3	Y21-2	Y25-3	—	Two	50 1/4
YA-10	100	2 3/8"	6 3/8"	177*	YS-65A	Y22-3	Y21-2	Y25-3	—	Two	80 3/4
Y-18	17 1/2	2"	6 7/8"	48	Y15-A	Y21-1	Y21-2	Y25-3	Y1-A**	Single	35 1/2
Y-33	30	2 1/2"	8 1/16"	107	Y30-A	Y21-1	Y21-2	Y25-3	Y1-A**	Single	49
Y-53	50	3"	10 9/16"	200	Y50-A	Y21-1	Y21-2	Y25-3	Y1-A**	Single	73

*Based on 50% of the stroke being made in the low-pressure stage, 50% in the high-pressure stage.

**Y1-B Tee also included.



T.M.

the Performance Line of "CENTER-HOLE"

POWER-TWIN® RAMS

- IN CAPACITIES OF 17½, 30, 50 and 100 TONS
- FOR OPERATING PRESSURES UP TO 10,000 P.S.I.



Ideal for maintenance work and production jobs requiring a great deal of force and a relatively short stroke. Compared to the force it develops, each OTC "Power-Twin" center-hole ram is lightweight, compact and easy to handle... permitting its use in confined quarters where most other rams of comparable capacity cannot be used. Because of the center-hole feature, jacking screws, cables, puller screws, etc., can be extended straight through the unit. Ram features a basic head which allows operator to change from a tapped hole to a plain hole by merely changing the head insert. Ram body is a ductile iron casting.

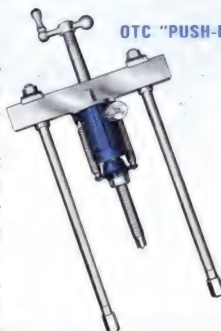
versatility plus...

with the "CENTER-HOLE" feature!

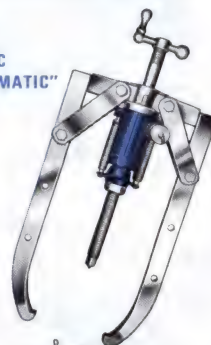
Permits extending jacking screws, cables, puller screws, etc., straight through the ram for greatly increased versatility of application.

QUICK-CHANGE INSERTS

For added job versatility, "Power-Twin" rams feature a basic head which allows the operator to switch from a tapped hole to a plain hole by merely changing the "quick-change" ram head insert (held in place by a socket-head set screw). In certain applications, the use of a plain-hole insert is desired, since it permits using a speed nut for necessary re-adjustment after the ram has been extended, rather than turning the screw with a speed crank.



OTC "PUSH-PULLER"

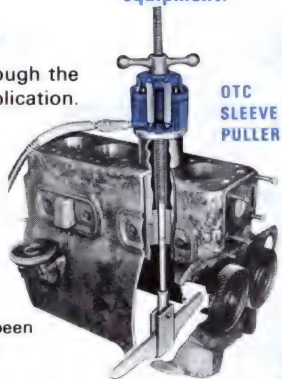


OTC "GRIP-O-MATIC" PULLER

Use ram on "Grip-O-Matic" pullers, "Push-pullers", shop presses, other equipment!



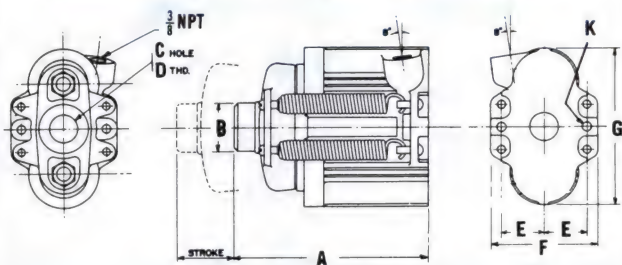
OTC SHOP PRESS



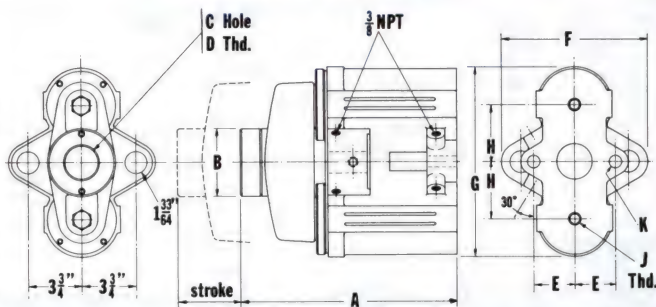
OTC SLEEVE PULLER

SPECIFICATIONS AND DIMENSIONS

SINGLE-ACTING, SPRING-RETURN NOS. Y15-A, Y30-A & Y50-A



DOUBLE-ACTING NO. Y999-A



(Dimensions for reference only... consult factory if more detailed dimensions are required)

OTC No.	Capacity (tons)		Stroke	Oil Capacity (cu. in.)	Eff. Area (sq. in.)	Internal p.s.i. at Capacity	A	B	C	D	E	F	G	H	J	K	Wt. (lbs.)
	Push	Pull															
Y15-A	17 ½	—	2"	7.06	3.53	10,000	6 7/8"	1 3/4"	1 1/16"	1" — 8	1 1/2"	3 3/4"	5 3/4"	—	—	1 1/2"	12
Y30-A	30	—	2 1/2"	15.7	6.28	10,000	8 7/16"	2 1/4"	1 9/16"	1 1/4" — 7	1 13/16"	4 1/2"	7 1/2"	—	—	1 5/8"	24
Y50-A	50	—	3"	29.4	9.81	10,000	10 9/16"	2 7/8"	1 3/4"	1 5/8" — 5 1/2	2 3/8"	5 7/8"	9 3/8"	—	—	2 1/2"	49
Y999-A	100	5	5"	96.5	19.24*	10,000	15 1/8"	4 3/4"	2 9/16"	2 1/2" — 8	2 7/8"	10 1/8"	13 1/4"	4"	3/4" — 16	2 5/8"	176

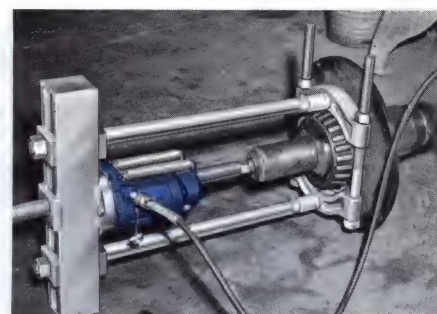
* Push side only.



Time saved, operator fatigue reduced 100%! Ram power-feeds cutting tool on steel mill rolling lathe.



Four rams prestress steel rod for forming prestressed concrete beams; eliminate need for special bar stock.



"Push-puller", with 50-ton "Power-Twin" ram, easily removes large tapered roller bearing cone.



ORDERING INFORMATION:

See preceding page for ram specifications and dimensions!

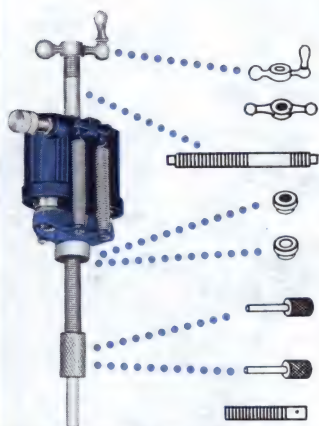
ORDER NO.

TO GET

- Y15-A** 17 1/2-ton capacity "Power-Twin" single-acting hydraulic ram. Complete with Y15-2C threaded ram head insert, ram attaching screws and Y25-1 ram half coupler. Weight, 12 lbs.
- Y30-A** 30-ton capacity "Power-Twin" single-acting hydraulic ram. Complete with Y30-2C threaded ram head insert, ram attaching screws and Y25-1 ram half coupler. Weight, 24 lbs.
- Y50-A** 50-ton capacity "Power-Twin" single-acting hydraulic ram. Complete with Y50-2C threaded ram head insert, ram attaching screws and Y25-1 ram half coupler. Weight, 49 lbs.
- Y999-A** 100-ton capacity "Power-Twin" double-acting hydraulic ram. Complete with Y999-2C threaded ram head insert and two Y25-1 ram half couplers. Weight, 176 lbs.

USEFUL ACCESSORIES FOR YOUR **POWER-TWIN**® RAM

These accessories permit you to utilize the versatility of your OTC "Power-Twin" ram to the fullest!



DESCRIPTION	ACCESSORIES FOR SINGLE-ACTING RAMS			FOR DOUBLE-ACTING
	17 1/2-TON	30-TON	50-TON	100-TON
SPEED CRANK	Y15-13	Y30-13	Y50-13	Y1000-13
SPEED NUT	973-8 1"-8 thread	Y30-15 1 1/4"-7 thread	Y50-15 1 1/2"-5 1/2 thread	Y1000-15 2 1/2"-8 thread
ADJUSTING SCREW	Y15-12 1"-8 thd., 20" long	Y30-12 1 1/4"-7 thd., 24" long	Y50-12 1 1/2"-5 1/2 thd., 30" long	Y1000-12 2 1/2"-8 thd., 36" long
THREADED INSERT	Y15-2C 1"-8 thread	Y30-2C 1 1/4"-7 thread	Y50-2C 1 1/2"-5 1/2 thd.	Y999-2C 2 1/2"-8 thread
PLAIN-HOLE INSERT	Y15-2D 1 1/8" diameter hole	Y30-2D 1 1/4" diameter hole	Y50-2D 1 1/2" diameter hole	Y999-2D 2 1/8" diameter hole
PUSHING ADAPTER	938-14 1"-8 thread 1/2" dia. shank	939-14 1 1/4"-7 thread 3/4" dia. shank	939 1/2-14 1 1/2"-5 1/2 thd. 1" dia. shank	—
PUSHING ADAPTER	938-15 1"-8 thread 3/4" dia. shank	939-15 1 1/4"-7 thread 1" dia. shank	939 1/2-15 1 1/2"-5 1/2 thd. 1 1/4" dia. shank	—
JACK SCREW	Y15-14 1"-8 thd., 7" long	Y30-14 1 1/4"-7 thd., 9" long	Y50-14 1 1/2"-5 1/2 thd., 11" long	Y1000-14 2 1/2"-8 thd., 16" long



T.M.

the Performance Line of versatile SINGLE-ACTING, SINGLE-CYLINDER "YS" series RAMS

- Available in capacities of from 2 to 50 tons.
- The answer to most application requirements.
- For maximum working pressures up to 10,000 p.s.i.

RAM CAPS NOT INCLUDED
WITH THESE RAMS . . . SEE
PAGE 29 TO ORDER.



Name most any hydraulic application—actuating clamping jigs on a production line; powering structural testing devices; bending or straightening rod or bar stock—chances are, an OTC "YS" series ram is your best choice. Ranging in capacity from 2 to 50 tons, in standard stroke lengths of from $\frac{3}{8}$ " to $13\frac{1}{2}$ ", these compact, lightweight cylinders require a minimum of mounting space. Several of the rams feature threaded ram collars and internal base threads to simplify mounting, and threaded piston rod ends.

Rams now have chrome-plated piston rod and rod wiper, to prevent internal contamination, even under severe service in unclean work environments. New packing design assures positive sealing in all pressure ranges, yet full piston return characteristics of "YS" rams are maintained. Additional bearing surface has been designed into these units, to effectively resist the punishing stresses exerted by off-center loads.

See pages 29 and 42 for accessories and hoses . . .

SPECIFICATIONS AND DIMENSIONS

OTC No.	Capacity in Tons	Stroke "A"	Oil Capacity (cu. in.)	Effective Ram Area (sq. in.)	Internal P.S.I. at Capacity	Spring Return	Height		Piston Protrusion at Collapsed Ht.	Diameter		Piston Thread (N.P.T.) "F"	Collar Thread (Straight) "G"	Internal Base Thread (N.P.T.) "H"	Shipping Wt. (lbs.)
							Collapsed "B"	Extended "C"		"D"	"E"				
YS-100A	2	3"	3.0	.994	*4,025	No	5 $\frac{1}{16}$ "	18 $\frac{1}{16}$ "	$\frac{1}{4}$ "	1 $\frac{1}{2}$ "	$\frac{3}{8}$ "	None	None	None	2 $\frac{3}{4}$
YS-101A	4	5"	5.0	.994	*8,050	Yes	10 $\frac{1}{2}$ "	15 $\frac{1}{2}$ "	1 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	1 $\frac{1}{16}$ "	$\frac{3}{4}$ "	1 $\frac{1}{2}$ "-16	$\frac{3}{4}$ "	4 $\frac{1}{2}$
YS-102A		$\frac{5}{8}$ "	.64	.994	*8,050	No	1 $\frac{3}{4}$ "	2 $\frac{3}{8}$ "	Flush	1 $\frac{1}{4}$ " x 2 $\frac{1}{2}$ "	1"	None	None	None	3 $\frac{3}{4}$
YS-105A	10	2 $\frac{1}{4}$ "	4.66	2.0739	**9,650	Yes	5 $\frac{1}{16}$ "	7 $\frac{1}{16}$ "	1 $\frac{3}{16}$ " & 1 $\frac{1}{16}$ "	2 $\frac{1}{4}$ "	1 $\frac{3}{8}$ " & 1 $\frac{1}{8}$ "	1 $\frac{1}{4}$ "	2 $\frac{1}{4}$ "-14	None	6 $\frac{1}{2}$
YS-106A		6"	12.44	2.0739	**9,650	Yes	11 $\frac{1}{2}$ "	17 $\frac{1}{2}$ "	1 $\frac{1}{16}$ "	2 $\frac{1}{4}$ "	1 $\frac{1}{8}$ "	1 $\frac{1}{4}$ "	2 $\frac{1}{4}$ "-14	1 $\frac{1}{4}$ "	10 $\frac{1}{4}$
YS-107A		10"	20.74	2.0739	**9,650	Yes	15 $\frac{1}{2}$ "	25 $\frac{1}{2}$ "	1 $\frac{1}{16}$ "	2 $\frac{1}{4}$ "	1 $\frac{1}{8}$ "	1 $\frac{1}{4}$ "	2 $\frac{1}{4}$ "-14	1 $\frac{1}{4}$ "	13 $\frac{3}{4}$
YS-112A		5"	24.5	4.9087	***8,150	Yes	10 $\frac{1}{16}$ "	15 $\frac{1}{16}$ "	1 $\frac{1}{8}$ "	3 $\frac{3}{8}$ "	2 $\frac{3}{8}$ "	2"	3 $\frac{3}{16}$ "-12	2"	21 $\frac{1}{2}$
YS-113A	20	13 $\frac{1}{2}$ "	66.3	4.9087	***8,150	Yes	20"	33 $\frac{1}{2}$ "	1 $\frac{1}{8}$ "	3 $\frac{3}{8}$ "	2 $\frac{3}{8}$ "	2"	3 $\frac{3}{16}$ "-12	2"	36 $\frac{3}{4}$
YS-120A	50	6"	66.3	11.045	***9,050	Yes	10 $\frac{3}{8}$ "	16 $\frac{3}{8}$ "	$\frac{3}{16}$ "	4 $\frac{1}{8}$ "	3 $\frac{3}{8}$ "	None	None	None	58

Cylinders YS-100A and YS-101A include a Y25A-1 $\frac{1}{4}$ " NPT half coupler; oil port threads are $\frac{1}{4}$ " NPT.
Cylinders YS-102A thru YS-120A include a Y25-1 $\frac{3}{8}$ " NPT half coupler; oil port threads are $\frac{3}{8}$ " NPT.

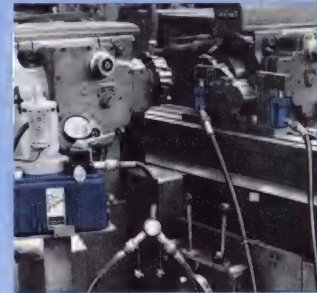
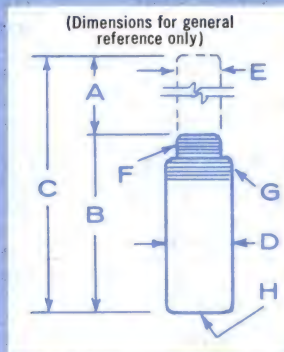
*Develops 4.97 tons at maximum working pressure of 10,000 p.s.i.

**Develops 10.369 tons at maximum working pressure of 10,000 p.s.i.

***YS-112A and YS-113A develop 24,543 tons at maximum working pressure of 10,000 p.s.i.; YS-120A develops 55,225 tons at maximum working pressure of 10,000 p.s.i.

†YS-100A has a piston "screw-extension" (1 $\frac{1}{8}$ ") which will extend the maximum height to 9 $\frac{1}{16}$ ".

‡The piston end is designed to accept either a serrated plug ($\frac{1}{4}$ " high) or a threaded (1 $\frac{1}{8}$ " NPT) plug (1 $\frac{1}{16}$ " high). The threaded (1 $\frac{1}{8}$ " NPT) plug is included with the YS-105A cylinder. Serrated plug No. 25485 must be ordered separately.



Cylinders used in clamping fixture to hold casting in place for milling operation.



put OTC hydraulic power to work with...

ACCESSORIES FOR "YS" series RAMS

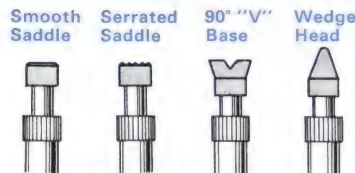
T.M.



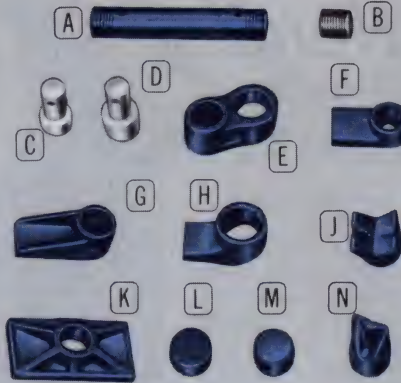
ACCESSORIES FOR USE WITH 4-TON RAM

Attachments are designed for use with the OTC No. YS-101A hydraulic ram.

Description	OTC No.
A—Extension tube; 10"	V-403
B—Threaded tube coupling	V-407
C—Lock-on male adapter	V-408
D—Lock-on female adapter	V-409
E—Tube clamp adapter	V-411
F—Plunger toe	V-417
G—Ram collar toe	V-419
H—90° "V" base	V-420
J—Ram flat base	V-421
K—Serrated saddle	V-423
L—Wedge head	V-430



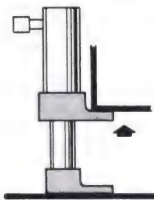
Various-shaped heads may be attached to rod or base end of ram, or used with extension tubes.



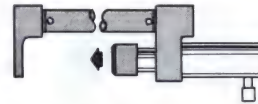
ACCESSORIES FOR USE WITH 10-TON RAMS

For use with OTC 10-ton hydraulic rams, No. YS-106A and No. YS-107A.

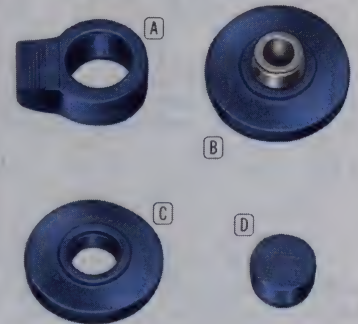
Description	OTC No.
A—Extension tube; 10"	V-1002
B—Threaded connector	V-1005
C—Lock-on male adapter	V-1008
D—Lock-on female adapter	V-1009
E—Tube clamp adapter	V-1011
F—Threaded plunger toe	V-1017
G—Lock-on plunger toe	V-1018
H—Ram collar toe	V-1019
J—90° "V" base	V-1020
K—Ram flat base	V-1021
L—Serrated saddle	V-1023
M—Smooth saddle	V-1024
N—Wedge head	V-1030



Toe adapters used in spreading operation.



Set-up for a pressing application is shown; toe adapters and an extension tube are used.



ACCESSORIES FOR USE WITH 20-TON RAMS

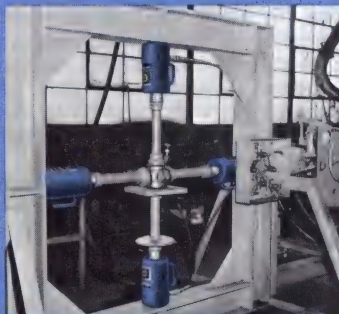
Intended for use with OTC hydraulic ram Nos. YS-112A and YS-113A.

Description	OTC No.
A—Ram collar toe	V-2019
B—Ram flat base	V-2021
C—Plunger base	V-2022
D—Serrated saddle	V-2023

ACCESSORIES HELP THE RAM DO ITS JOB

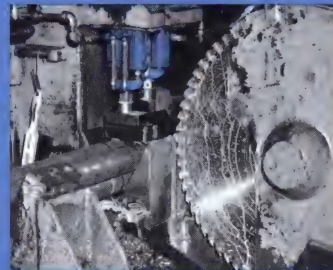
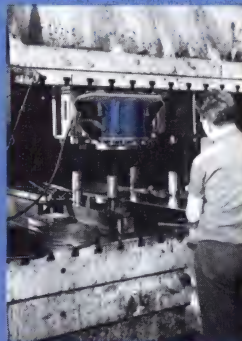
Versatile attachments let you "harness" OTC hydraulic force and put it to work exactly where it's needed, to handle an endless variety of maintenance tasks. These accessories thread onto the ram's piston rod end or collar, or into the ram base. The extension tubes provide additional "reach" to perform various jobs.

OTC hydraulic power in action...



Four 50-ton rams are used in fixture to seal openings of a rough casting while water is injected under pressure during a leakage testing operation.

Finished pieces are ejected from stamping die of a press by an OTC "Shorty" ram.



Above: Two "Power-Twin" rams clamp bar stock in position for a giant metal-cutting saw.

Right: OTC "Vanguard" powers lifting device which enables tail of airliner to clear low hanger door.





the Performance Line of compact

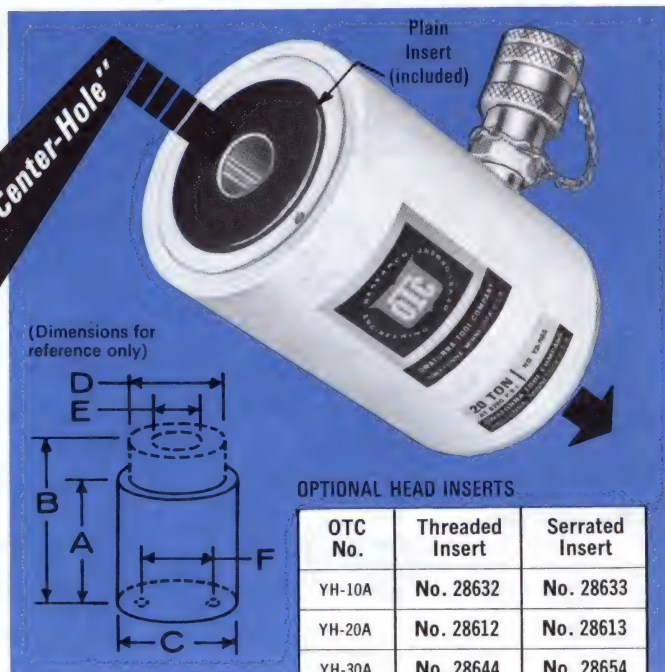
T.M.

"YH" series

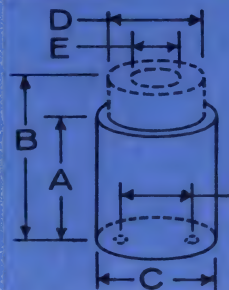
"Center-Hole" HYDRAULIC RAMS

- Provide longer stroke, faster piston return than any other rams of comparable size and design.

OTC's "Center-Hole" ram line offers you complete flexibility. Forcing screws, cables or rods can be extended right through the piston's "Center-Hole", permitting hundreds of production or maintenance set-ups. An interchangeable, heat-treated piston head insert (plain) is standard with each ram. Threaded and serrated inserts are available—see accompanying chart. There are also tapped mounting holes in the base of each ram to make installation easy. OTC spring-return models provide longer stroke than any other of comparable size, and piston return is faster and more positive, also! Bronze-plated piston rod resists wear caused by side loading, superior packings and seals assure high-cycle life without leakage. The double-acting 30-ton and 60-ton rams feature extra-fast hydraulic return of the piston. Rams are equipped with No. Y25-1 quick-disconnect 3/8" NPT half couplers. Adjusting screws for use with 20, 30 and 60-ton rams are listed on page 27 of this catalog.



(Dimensions for reference only)



OPTIONAL HEAD INSERTS

OTC No.	Threaded Insert	Serrated Insert
YH-10A	No. 28632	No. 28633
YH-20A	No. 28612	No. 28613
YH-30A	No. 28644	No. 28654
YH-60A	No. 34251	No. 34252

SPECIFICATIONS AND DIMENSIONS

OTC No.	Capacity (tons)	Stroke	Oil Capacity (cu. in.)	Effective Area (sq. in.)	Internal p.s.i. at Capacity	Piston Return	Height		O.D. "C"	Dia. "D"	Dia. "E"	Piston Insert Hole Thd.	Mounting Holes	"F"	Weight (lbs.)
							"A"	"B"							
YH-10A*	10	2 1/2"	5.50	2.21	9,050	Spring	5 1/16"	7 13/16"	3"	2 1/16"	3/4"	3/4"-16	1/4"-20	2 3/8"	8 1/2
YH-20A*	20	3"	11.75	3.92	10,200	Spring	6 1/16"	9 1/16"	4"	2 3/4"	1"	1"-8	3/8"-16	3 1/4"	18
YH-30A*	30	3"	17.6 (piston end) 12.9 (rod end)	5.875 (piston end) 4.30 (rod end)	10,200	Hydraulic	7 1/16"	10 1/16"	4 1/2"	2 1/2"	1 1/16"	1 1/4"-7	3/8"-16	3 3/8"	24 1/4
YH-60A*	60	5"	61.7 (piston end) 25.9 (rod end)	12.35 (piston end) 5.17 (rod end)	9,700	Hydraulic	9 1/2"	14 1/2"	6 1/4"	4"	2 1/8"	1 1/8"-5 1/2	1/2"-13	5 1/8"	62

*Has 3/8" NPT half coupler (YH-30A and YH-60A have two half couplers).

"Shorty" RAM "YS" series

- Piston head tilts 10° to reduce off-center loading.
- Compact in size, yet feature a full 2 3/8" stroke.
- Designed for operating pressures to 10,000 p.s.i.

OTC "Shorty" Rams . . . midgets in size, GIANTS in power! These single-acting 10,000 p.s.i. units are extremely compact in size, yet they offer a full 2 3/8" stroke. Masters of a thousand and one jobs . . . in industry, construction, house-moving . . . wherever brute lifting or pushing force is needed in limited working space. Ram piston top features a unique new tilting head which concentrates force at or near the center of the piston, reducing off-center loading. To permit accurate visual centering of the load, the piston top has a concentric ring pattern. The ram body is cast of the finest ductile iron, and the piston is made of specially-selected alloy steel. All "Shorty" Rams are manual-return types. The ram's 3/8" NPT half coupler is angled upward at 15° to allow easy hose attachment and removal. Three capacities available . . . 30, 50 and 100 tons. For ease of handling, 100-ton model features convenient carrying handles.



HEAD TILTS 10°

SPECIFICATIONS AND DIMENSIONS

OTC No.	Capacity (tons)	Stroke	Oil Capacity (cu. in.)	Effective Area (sq. in.)	Internal p.s.i. at Capacity	Manual Return	Oil Port NPT	Height		O.D. "C"	Dia. "D"	Weight (lbs.)
								"A"	"B"			
YS-63A*	30	2 3/8"	15.4	6.4918	10,000	Yes	3/8"	5 3/16"	7 9/16"	3 15/16"	2 3/8"	13 3/4
YS-64A*	50	2 3/8"	26.2	11.045	10,000	Yes	3/8"	5 9/16"	7 13/16"	3 1/2"	3 3/8"	23 1/2
YS-65A*	100	2 3/8"	49.1	20.629	10,000	Yes	3/8"	6 3/8"	8 3/4"	7"	4 1/4"	54

*Has 3/8" NPT Half Coupler.

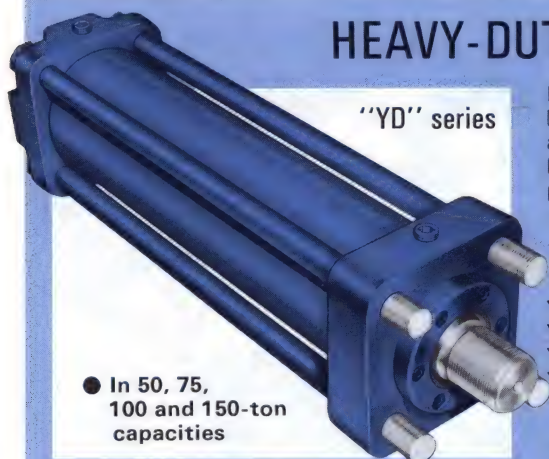
(Dimensions for general reference only)



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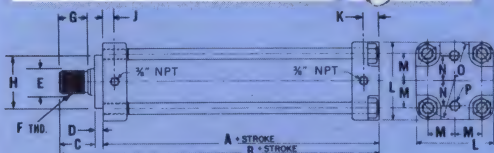
the Performance Line of precision

RAMS AND PUMPS



"YD" series

● In 50, 75, 100 and 150-ton capacities



	Tie-Rod Extension Thread Size
YD-50	1/2" -14NF
YD-75	1" -14NF
YD-100	1 1/2" -12NF
YD-150	1 1/2" -12NF

(Dimensions for general reference only)

Double-acting, precision-built cylinders for use up to 10,000 p.s.i. Spring-loaded V-packings assure seal at all pressures. Heavy-wall tubing bored and honed; chrome-plated alloy steel piston rod; bronze rod and piston bushings; rod wiper. Each ram has threaded rod cap, 3/8" NPT female ports. Standard stroke lengths available from stock with tie-rod extensions (rod end). In 50, 75, 100 and 150 ton capacities.

ORDER NO.

TO GET

YD50-12-B2 1/2—50-ton cyl.; 12" stroke; 2 1/2" tie rod extensions (rod end).
 YD75-11-B2 1/2—75-ton cyl.; 11" stroke; 2 1/2" tie rod extensions (rod end).
 YD100-15-B3 1/4—100-ton cyl.; 15 1/2" stroke; 3 3/4" tie rod extensions (rod end).
 YD150-15-B4 1/4—150 ton cyl.; 15" stroke; 4 1/4" tie rod extensions (rod end).

SPECIFICATIONS AND DIMENSIONS

OTC No.	Bore	Capacity (tons)		Stroke	Oil Capacity (cu. in.)		Effective Ram Area (sq. in.)	
		Push	Pull		Push	Pull	Push	Pull
YD-50	3 3/4"	50	35	12"	132	94	11.0	7.8
YD-75	4 1/2"	75	55	11"	175	121	15.9	11.0
YD-100	5 5/8"	100	65	15 1/2"	319	209	20.6	13.5
YD-150	6 3/8"	150	110	15"	478	335	31.9	22.3

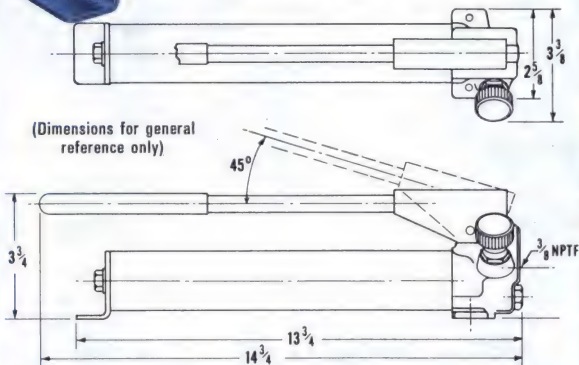
OTC No.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Tie-Rod Extensions (Rod End)
YD-50	8 1/16"	11 3/16"	2 5/8"	5/8"	2"	1 3/4"-12	2 1/8"	4"	3/8"	1 1/8"	5 1/16"	2 1/32"	2"	5 3/4"	3/4"-10NC	2 1/2"
YD-75	9 1/2"	13 1/2"	3 1/4"	3/4"	2 1/2"	2 1/4"-12	2 3/4"	5"	1 1/8"	1 3/8"	6 1/4"	2 1/16"	2 3/8"	6 1/8"	7/8"-14NF	2 3/4"
YD-100	10 1 1/16"	15 5/8"	3 13/16"	7/8"	3"	2 3/4"-12	3 3/4"	5 1/2"	1 3/8"	1 3/4"	7 3/4"	2 3/4"	2 3/4"	7 3/4"	1"-8NC	3 3/4"
YD-150	12 1/8"	16 5/8"	3 3/4"	1"	3 1/2"	3 3/4"-12	3 3/4"	6 1/2"	1 1/2"	1 1 1/4"	9 1/2"	3 7/16"	3 3/8"	9 3/4"	1 1/4"-14NF	4 1/4"



Y-20

U.S. Patent No. 3,822,966

(Dimensions for general reference only)



Y-20 SERIES SINGLE-SPEED HAND OPERATED PUMP

- Features a built-in safety overload valve.
- Single-speed type pump delivers up to 10,000 p.s.i. pressure.

This is the economical lightweight champ for single-acting rams. It's a single-piston, single-speed pump that develops up to 10,000 p.s.i. Operates horizontally or vertically with the pump head in the "down" position. Finger-tip control valve provides instant release or pumping action. Pump has a built-in safety-overload valve as well as a 12.5 cu. in. reservoir. Use with OTC 2, 4 and 10-ton "YS" series single-acting hydraulic rams. Maximum handle effort is only 75 lbs. Hoses, hose half-couplers, pressure gauges and tees are available and described on pages 41 and 42 of this catalog.

No. Y-20—Hand pump only. Has 12.5 cu. in. reservoir. Weight, 8 lbs.

Pump No.	Max. Pressure	Volume Per Stroke	Piston Dia.	Piston Stroke	Reservoir Capacity	Oil Port
Y-20	10,000 p.s.i.	.069 cu. in.	3/8"	5/8"	12.5 cu. in.	3/8" NPT



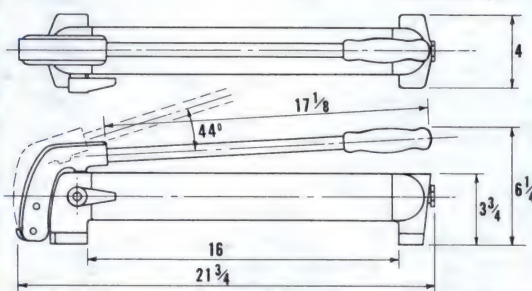
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the Performance Line of popular SINGLE & 2-SPEED HAND PUMPS



Y-21 series

(Dimensions for general reference only)



Y-21 SERIES SINGLE-SPEED HAND-OPERATED PUMPS

A low-cost power source for single-acting rams that has a long history of proven reliability. This popular, lightweight OTC pump is of the single-piston, single-speed type and develops pressures up to 10,000 p.s.i. The pump's versatility is indicated by its ability to operate either horizontally . . . or vertically with the pump head in the "down" position. A finger-tip control valve provides instant release or pumping action. Pump has a built-in safety-overload valve. Ideal for use with OTC "Power-Twin" and "YS" series single-acting hydraulic rams. Maximum handle effort: 122 lbs.

No. Y21-1—Hand pump only. Has 1-quart (58 cu. in.) reservoir. Weight, 19 lbs.

No. Y-21—Y21-1 hand pump with Y21-2 6' hose and Y25-3 hose half coupler. Weight, 22 lbs.

No. Y21-A—Y21-1 hand pump with Y21-2 6' hose, Y25-3 hose half coupler, Y1-A pressure gauge and Y1-B tee. Weight, 24 lbs.

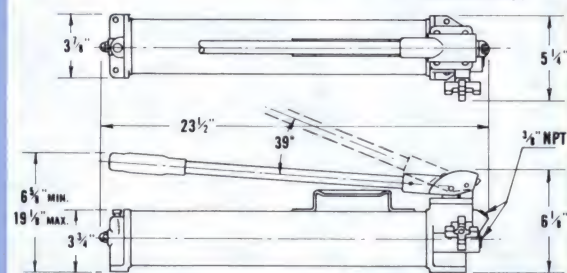
Pump No.	Max. Pressure	Volume Per Stroke	Piston Dia.	Piston Stroke	Reservoir Capacity	Oil Port
Y21-1	10,000 p.s.i.	.147 cu. in.	1/2"	3/4"	1-quart (58 cu. in.)	3/8" NPT

► see pages 24-25 for ram and pump combinations



Y-22 series

(Dimensions for general reference only)



Dualmaster Jr.[®] Y-22 series 2-SPEED HAND PUMPS

Here's two-stage flexibility at a popular price! These pumps provide, in the low-pressure stage, high oil volume for rapid ram piston approach and return. For high-force requirements, the pump automatically switches to the high-pressure, low-volume stage. Compact and light in weight, "Dualmaster Jr." is available with built-in 3-way or 4-way control valves. Four pump models are offered. Models Y22-1 and Y22-2 feature 1" and 1/2" dia. pistons. With these models, considerable effective work can be accomplished, as well as reasonably fast ram approach, in the low-pressure stage (up to 1,400 p.s.i.). Models Y22-3 and Y22-4 feature 2" and 1/2" dia. pistons. With these models, the low-pressure stage provided by the 2" pump piston offers *four times faster ram approach and return* (up to 200 p.s.i.) than models Y22-1 and Y22-2. High-pressure stage performance is identical in all models. *For most applications involving single-acting rams, model Y22-3 is the best choice.* "Dualmaster Jr." pumps develop up to 10,000 p.s.i. Maximum handle effort is 90 lbs.

Pump No.	Max. Pressure at 1st and 2nd Stages	Volume Per Stroke	Piston Dia.	Piston Stroke	Reservoir Capacity (Usable)	Oil Ports
*Y22-1 & †Y22-2	1st stage 1400 p.s.i.	.59 cu. in.	1"	3/4"	75 cu. in.	3/8" NPT
	2nd stage 10,000 p.s.i.	.147 cu. in.	1/2"			
*Y22-3 & †Y22-4	1st stage 200 p.s.i.	2.35 cu. in.	2"	1/2"	75 cu. in.	3/8" NPT
	2nd stage 10,000 p.s.i.	.147 cu. in.	1/2"			

*Has built-in 3-way control valve. †Has built-in 4-way control valve.

No. Y22-1—Pump with 3-way valve for use with *single-acting* rams. Delivers .59 cu. in. of oil per stroke in low-pressure stage. Wt., 23 lbs.

No. Y22-2—Same as Y22-1 above, except has 4-way valve for use with *double-acting* rams. Wt., 24 lbs.

No. Y22-3—Pump with 3-way valve for use with *single-acting* rams. Delivers 2.35 cu. in. of oil per stroke in low-pressure stage. Wt., 23 lbs.

No. Y22-4—Same as Y22-3 above, except has 4-way valve for use with *double-acting* rams. Wt., 24 lbs.



the Performance Line of versatile

Dualmaster® 2-SPEED HAND PUMPS

Y-29 series

- Develops up to 10,000 p.s.i.



Pump and valving mount on common cover plate; permits use on other than standard OTC reservoirs.

DIMENSIONS

(Dimensions for reference only)

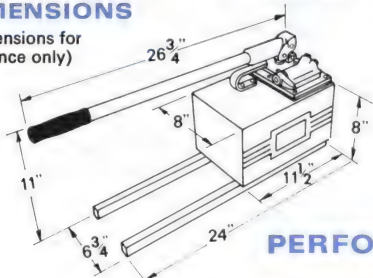


Chart shows speed of operation possible with "Dualmaster" 2-stage pump, as compared to a smaller 2-stage pump and a single-stage pump. The increase in speed of operation when "Dualmaster" is used is substantial.



4-WAY VALVE

Y-29 SERIES

Max. Pressure	Vol. per Stroke	Piston Dia.	Piston Stroke	Reservoir Capacity	Oil Port
200 p.s.i.	7.35 cu. in.	2 1/2"	1 1/2"	462 cu. in. (350 cu. in. usable)	3/8" NPT
10,000 p.s.i.	.294 cu. in.	1/2"			

ordering information...

No. Y29A-2-C—Hydraulic hand pump with No. 30740 2-position, 3-way control valve (for operating *single-acting* rams) and No. 41857 2-gal. (462 cu. in.) reservoir with legs. Approx. wt., 34 lbs.

No. Y29A-4-C—Hydraulic hand pump with No. Y-31094 3-position, 4-way control valve (for operating *double-acting* rams) and No. 41857 2-gal. (462 cu. in.) reservoir with legs. Approx. wt., 34 lbs.

PERFORMANCE EXAMPLES:

see pages 39 and 42 for accessories...

Job: To fully extend an OTC YS-107A ram (has 10" stroke)	Y29A Series Pump	Y22-3 Pump	Y21-1 Pump
5" of ram travel is under no load, 5" is under load.....	37 strokes	74 strokes	140 strokes

Y-13 Series

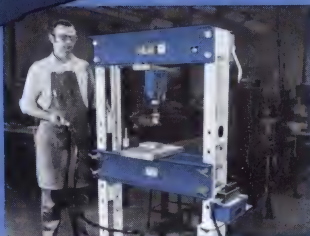
- Develops up to 10,000 p.s.i.

U.S. Pat. Nos. 3,218,980, 3,597,121 and 3,788,781. Canadian Pats. Issued. Foreign Pats. Issued and Pending.



Performance

Y-13 Series @ 100 p.s.i. air		Y-14 @ 100 p.s.i. air	
Hydraulic Pressure	Oil Delivery	Hydraulic Pressure	Oil Delivery
0 p.s.i.	35 cu. in./min.	0 p.s.i.	60 cu. in./min.
5,000 p.s.i.	10 cu. in./min.	1,500 p.s.i.	40 cu. in./min.
10,000 p.s.i.	4 cu. in./min.	3,000 p.s.i.	15 cu. in./min.



AIR/HYDRAULIC PUMPS

Here are three air/hydraulic pumps ideal for applications where an air supply of 40-120 p.s.i. is available. Oil pressure is proportional to air pressure with 10,000 p.s.i. oil pressure at 100 p.s.i. air pressure for the Y-13 and Y-13-REM models and 35:1 ratio for the Y-14 model. Three unique features make each a versatile and valuable addition to any hydraulic system. An internal relief valve protects hydraulic system components regardless of air pressure; a two-stage release mechanism allows for fast or metered ram-return, protecting system components; an 80 cu. in. reservoir allows the pump to be used with larger rams operating at 10,000 p.s.i. Air supply should have an in-line filter and lubricator as close to each pumping unit as possible.

see pages 39 and 42 for hoses and accessories...

No. Y-13—Air-driven hydraulic pump with hand/foot treadle actuator. Develops 10,000 p.s.i. at 100 p.s.i. air pressure. 3/8" NPT oil port. 80 cu. in. capacity reservoir. Weight, 18 lbs.

No. Y-13-REM—Air-driven hydraulic pump with remote control actuator, 15-ft. cord. Develops 10,000 p.s.i. at 100 p.s.i. air pressure. 3/8" NPT oil port. 80 cu. in. capacity reservoir. Weight, 21 lbs.

No. Y-14—Air-driven hydraulic pump with hand/foot treadle actuator. Develops 3,000 p.s.i. at 100 p.s.i. air pressure. 3/8" NPT oil port. 80 cu. in. capacity reservoir. Weight, 18 lbs.



the Performance Line of dependable

T.M.

Vanguard®

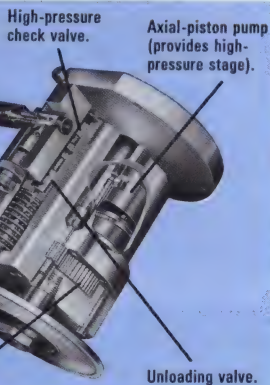
2-STAGE, HI-PRESSURE
POWER UNITS

Y-26, Y-60 and Y-70 series

- Delivers high oil volume for fast ram approach and return, automatically shifts to high-pressure stage when under load.
- Extremely reliable in operation.
- Choose from standard "off-the-shelf" models or specify a custom-built "Vanguard" if your needs are specialized.
- Available in 5,000 or 10,000 p.s.i. versions, with your choice of power sources . . . electric, air or gasoline engine.

U.S. Patent
No. 3,053,186

Thousands of users have put "Vanguard" to work in a variety of hydraulic power applications as wide as the imagination. And, the reputation for trouble-free performance this pumping unit has earned is a proven, documented fact, not a sales claim. OTC's "Vanguard" is a fast-acting, precision-built, two-stage pumping unit consisting of a gear pump for the low-pressure stage and an axial-piston pump for the high-pressure stage, the latter being "supercharged" by the gear pump. "Vanguard" delivers low volume at high pressure, yet provides high volume at low pressure (600 cu. in. of oil/min. at 100 p.s.i.) for fast cylinder piston approach and return. If one of the "standard" pumping units listed on the next two pages does not suit your needs, you can take advantage of "building-block" flexibility, and choose from an amazing variety of motors, controls, reservoirs and other options, without paying "custom-built" prices! Your "Vanguard" comes to you completely assembled and ready to use.



Y-26, Y-60 and
Y-70 series

Approx. wt., 45 lbs.

see following pages for
ordering information ■ ■ ➔

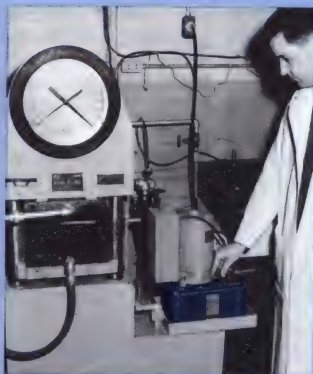
wherever speed, power and dependability are
a must...you'll find **Vanguard®** on the job!

The compact size and light weight of high-pressure hydraulic components make them adaptable to unique power applications in most every industry. Here are just a few examples.

"Vanguard" hydraulic power is shown post-tensioning steel tendons in construction of concrete buildings.



Hydraulic tool cuts heavy reinforcing rod on construction site. Gasoline engine "Vanguard" is power source.



"Vanguard" safeguards product quality by automating a curing operation in laminated-plastic testing. Pressure switch maintains desired p.s.i.

Giant tire retreading mold is opened and closed by double-acting cylinders. "Vanguard" provides power.



here are the standard *Vanguard*[®] power units . . .

One of the "standard" pre-selected "Vanguard" power packages listed below or on page 36 will meet the needs of *most* applications.

. . . with Universal motor



115 volt,
60/50
cycle A.C.
sgl. phase

Universal motor starts under full load, is suitable for operation up to 10,000 p.s.i. Readily portable.

for double-acting rams . . .

No. Y26A-E-O-O-A-B

Consists of: Basic 10,000 p.s.i. pump; universal motor (1½ h.p., 12,000 r.p.m., 115 volt, 60/50 cycle A.C. sgl. phase); No. Y-31094 4-way control valve; "Run-Off-Jog" motor control switch; No. 40063-BL2 2-gal. reservoir.

for single-acting rams . . .

No. Y26A-D-O-O-A-B

Same as above, except has No. Y-30384 3-way control valve.

. . . with Jet Pump motor



115 volt,
60 cycle
A.C.
sgl. phase

Jet pump motor has low noise level, long life due to moderate speed. Ideal for fixed installations. Single phase.

for double-acting rams . . .

No. Y26D-E-O-O-A-B

Consists of: Basic 10,000 p.s.i. pump; jet pump motor (1½ h.p., 3,450 r.p.m., 115 volt, 60 cycle A.C. sgl. phase); No. Y-31094 4-way control valve; "Run-Off-Jog" motor control switch; No. 40063-BL2 2-gal. reservoir.

for single-acting rams . . .

No. Y26D-D-O-O-A-B

Same as above, except has No. Y-30384 3-way control valve.

. . . with Jet Pump motor



220 volt,
60 cycle
A.C.
3-phase

Jet pump motor has low noise level, long life due to moderate speed. Ideal for fixed installations. Three phase.

for double-acting rams . . .

No. Y26F-E-O-O-C-B

Consists of: Basic 10,000 p.s.i. pump; jet pump motor (1½ h.p., 3,450 r.p.m., 220 volt, 60 cycle A.C. 3-phase); No. Y-31094 4-way control valve; No. 40165 motor control with "Run-Off-Jog" switch; No. 40063-BL2 2-gal. reservoir.

for single-acting rams . . .

No. Y26F-D-O-O-C-B

Same as above, except has No. Y-30384 3-way control valve.

TO ORDER 5,000 P.S.I. POWER UNITS . . .

To obtain a "Vanguard" for 5,000 p.s.i. maximum operating pressure rather than 10,000 p.s.i., simply substitute "Y60" for "Y26" in the order number.

see following page ■■►

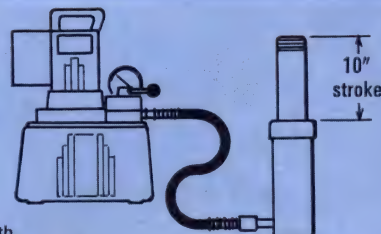
Vanguard[®]

PERFORMANCE (Oil Delivery)

	600 cu.in./min. at	100 p.s.i.
Y-26	80 cu.in./min. at	1,000 p.s.i.
series	70 cu.in./min. at	5,000 p.s.i.
	55 cu.in./min. at	10,000 p.s.i.
	600 cu.in./min. at	100 p.s.i.
Y-60	130 cu.in./min. at	1,000 p.s.i.
series	90 cu.in./min. at	5,000 p.s.i.
	600 cu.in./min. at	100 p.s.i.
Y-70	140 cu.in./min. at	1,000 p.s.i.
series	130 cu.in./min. at	5,000 p.s.i.
	120 cu.in./min. at	10,000 p.s.i.

a typical example of "Vanguard" speed!

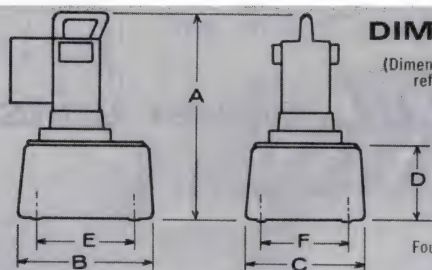
Compare speed of ram operation possible when the "Vanguard" is used with that provided by a typical hand pump.



YS-107A Ram

Job: To fully extend an OTC YS-107A ram (has 10" stroke)	Y26A Series Power Unit	Y-21 Series Hand Pump
5" of ram travel under no load . .	1.5 seconds	140 strokes of pump handle
5" of ram travel under load	12 seconds	
Total time required	13.5 seconds	4 to 5 minutes*

*Handle effort at max. pressure is over 100 lbs.



DIMENSIONS

(Dimensions for general reference only)

Four mounting holes:
($\frac{1}{2}$ "—20 NF)

Pump Series No.

Pump Series No.	A	B	C	D	E	F
Y26A, Y60A, Y26B, Y60B	18 $\frac{1}{4}$ "	12 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "	7"	10"	8"
Y26D, Y60D	20 $\frac{1}{4}$ "	12 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "	7"	10"	8"
Y26F	19 $\frac{3}{4}$ "	12 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "	7"	10"	8"
Y26G, Y60G	20 $\frac{3}{4}$ "	18"	12 $\frac{1}{2}$ "	8 $\frac{5}{8}$ "	16 $\frac{5}{8}$ "	9"
Y26L, Y60L	17 $\frac{1}{2}$ "	12 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "	7"	10"	8"
Y70M	20 $\frac{3}{8}$ "	12 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "	7"	10"	8"

NOTE: Dimensions shown apply to pumps with No. 40063-BL2 2-gal. reservoir, except for Y26G and Y60G.

... with Gasoline Engine

3.5 h.p.
4-cycle



Permits operation in the field where electricity is unavailable. Capable of continuous operation at full pressure.

for double-acting rams ...

No. Y26G-E-O-O-B-D

Consists of: Basic 10,000 p.s.i. pump; 4-cycle Briggs & Stratton gasoline engine, developing 3.5 h.p. at 3,600 r.p.m.; No. Y-31094 4-way control valve; No. 40137-BL2 5-gal. reservoir.

for single-acting rams ...

No. Y26G-D-O-O-B-D

Same as above, except has No. Y-30384 3-way control valve.

... with Air-driven motor

2 h.p.



Ideal for use in explosive atmospheres or remote areas where electricity is unavailable. Requires 50 p.s.i. air supply to start under full load.

for double-acting rams ...

No. Y26L-E-O-O-X-B

Consists of: Basic 10,000 p.s.i. pump; 2 h.p. air-driven motor (performance based on 100 p.s.i. air pressure at 80 c.f.m.); No. Y-31094 4-way control valve; No. 27876 hand-operated motor control valve*; No. 40063-BL2 2-gal. reservoir.

for single-acting rams ...

No. Y26L-D-O-O-X-B

Same as above, except has No. Y-30384 3-way control valve.*

*To obtain pump with foot-operated motor control, specify No. 27877.

... with 3 h.p. motor Y-70 series

Jet Pump,
220/440
volt, 60
cycle A.C.
3-phase



For maximum performance; delivers 120 cu. in. of oil at 10,000 p.s.i.

for double-acting rams ...

No. Y70M-E-O-O-X-B*

Consists of: Basic 10,000 p.s.i. pump; jet pump motor (3 h.p., 3,450 r.p.m., 220/440 volt, 60 cycle A.C. 3-phase); No. Y-31094 4-way control valve; No. 41301 motor control with "Run-Off-Jog" switch; No. 40063-BL2 2-gal. reservoir.

for single-acting rams ...

No. Y70M-D-O-O-X-B*

Same as above, except has No. Y-30384 3-way control valve.

*When ordering, specify whether 220 or 440 volt is desired.



PROTECT YOUR SYSTEM ... ORDER A PRESSURE GAUGE

In many applications, knowledge of system pressure being developed is very desirable, since this enables you to accurately measure the force being applied. Several OTC gauges featuring various calibrations are available. Equipped with $\frac{1}{4}$ " NPT male fittings, they are easily attached to the control valve body of your "Vanguard." The most popular gauge is listed below. See catalog page 39 for a complete gauge listing! No. Y5-A—Pressure gauge, calibrated 0-10,000 p.s.i. and in metric increments. Has $\frac{3}{8}$ " dia. dial face.

need a specially-equipped power unit? see pages 38-39
for information on "building-block" flexibility!

The unique flexibility of the "Vanguard" design allows you to "custom-build" a power unit to suit the most exotic application! Simply specify the components you desire. Tandem motors, solenoid-actuated control valves, pressure switches and many other options are available.

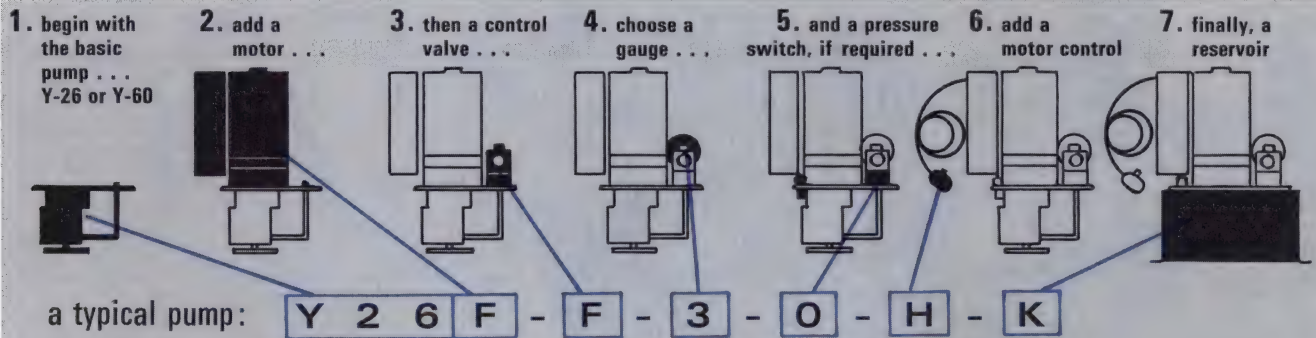




the Performance Line provides "building-block" flexibility

TO OBTAIN A *Vanguard* CUSTOM-BUILT FOR YOUR NEEDS:

The unique "building-block" flexibility of "Vanguard" enables you to specify the exact components which will comprise the pumping unit your particular application requires. Choose from a wide range of pre-engineered, off-the-shelf components (basic pumps, motors, control valves, gauges, pressure controls, motor controls, reservoirs). And, best of all . . . you don't pay high "custom-built" prices!



This "Vanguard" would consist of: Basic 10,000 p.s.i. pump with 1½ h.p., 220 or 440 volt jet pump motor; No. Y-31068-B1 2-position, 3-way solenoid-controlled valve; No. Y5-A gauge calibrated in p.s.i. and metric increments; no pressure switch; No. 21283 remote hand motor control switch; No. 23509 5-gal. reservoir.

how to select your components (listed on following pages)

1. choosing a Y-26 or Y-60 basic pump:

Desired oil delivery and maximum system operating pressure will determine which of the two basic pumps will be best. See page 35 for a performance comparison.

2. choosing a motor:

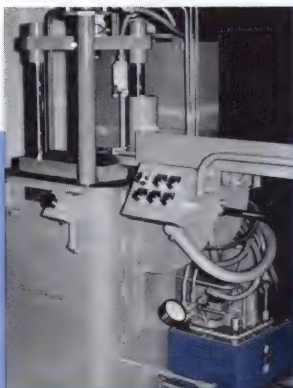
Consider these questions when selecting a motor: What is the intended frequency and duration of operation? Is continuous operation at full pressure intended? Is starting under load required? Is quiet operation desired? Is portability of the pumping unit a factor? Is use in an explosive atmosphere contemplated? Will the "Vanguard" be used where electricity is unavailable? If an electrically-driven motor is chosen, what is the voltage of your power supply?

3. choosing a control valve:

To control single-acting rams, select a 3-way valve; to control double-acting rams, choose a 4-way valve. Manually-operated, automatic and solenoid-controlled valves (for remote electrical actuation) are available. For individual control of multiple ram systems, specify Y-30383 manifold on pump and subplate-mount either Y-33184 valve for single-acting rams or Y-31095 valve for double-acting rams. Remote hand switch on pump will facilitate control for extending the ram.

4. choosing a gauge, pressure and motor controls and a reservoir:

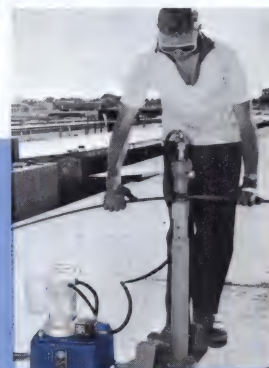
The unique requirements of your application may dictate selection of a pressure gauge . . . or special pressure controls to "automate" actuation of the pump motor . . . or hand or foot-operated remote motor controls . . . or an extra-large reservoir to assure adequate capacity and cooling of hydraulic oil.



Manufacturer of hose fitting swedging press chose "Vanguard" power!



Compression molding press has "Vanguard" as power source.



Cable cutter utilizes "Vanguard" with foot-operated control valve.



Dipping of tool handles in liquid plastic is automated.



T.M.

BASIC *Vanguard* PUMP-MOTOR UNITS

BASIC PUMPS

The heart of your "Vanguard" power unit is the basic pump, available in 5,000 and 10,000 p.s.i. versions. Select from the following chart the pump-motor combination which best suits your application.

MOTOR SELECTION CHART

Ordering KEY NO.	Max. Pressure P.S.I.	R.P.M.	H.P.	Motor Type	Volt-age	Phase	Cycles	Application Information
Y26A Y60A	10,000 5,000	12,000	1½	Uni- versal	115	Single	60/50/AC	Recommended for all portable and fixed installations where starting and stopping of motor under full load is desired.
Y26B Y60B	10,000 5,000				230			
*Y26D *Y60D	10,000 5,000	3,450	1½	Jet Pump Cap. Start Ind. Run	115 or* 230	3	60 or* 50 AC	Recommended for fixed installations where a very low noise level is desired and the motor is allowed to run continuously.
*Y26F *Y60F	10,000 5,000			Jet Pump	220 or* 440			Recommended for fixed installations where a very low noise level is desired and motor is started and stopped frequently (hi-cycle application).
Y26G Y60G	10,000 5,000	3,600	3.5	4-cycle Briggs & Stratton Gasoline Engine				Recommended for use where electricity is unavailable.

NOTE: Special voltage and cycle requirements necessitate additional lead time.

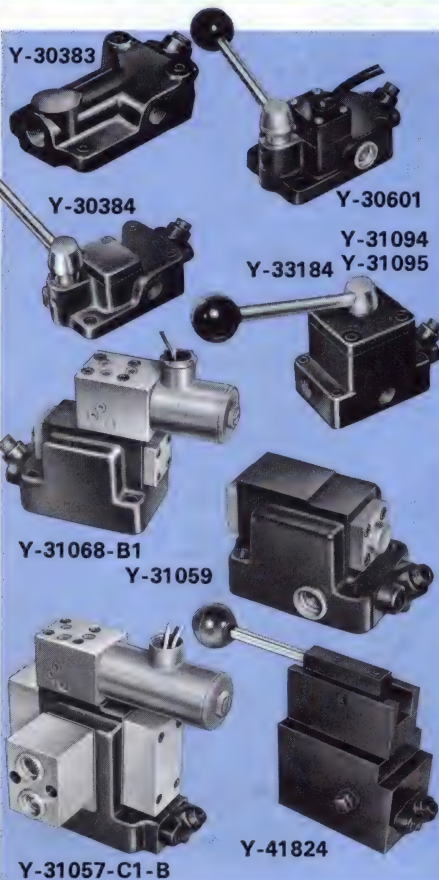
*Please specify voltage and cycles when ordering.

"TANDEM" MODELS AVAILABLE . . .

Two basic pumps may be mounted in a single reservoir; this set-up provides twice the oil volume of a single unit. A tandem set-up is recommended with models Y26 & Y60 B, D (230 volt only) and F. Simply add a suffix letter "T" (i.e. Y26BT) to the order number. Motors can be controlled individually or together from a common switch. Consult factory for detailed information.

CONTROL VALVES

Ordering KEY LETTER	OTC No.	Description
A.	—	None
B.	Y-30383	Manifold—with pressure and return ports. Use when manual control valves are remotely located.
C.	Y-30601	3-way lever-operated; detent-positioned; for single-acting rams. With control lever in "hold" or "return" positions, switch shuts off pump motor. Use for faster ram return.
D.	Y-30384	3-way lever-operated; detent-positioned; for single-acting rams. Has "advance" and "return" positions.
E.	Y-31094	4-way lever-operated; detent-positioned; for double-acting rams. Has "advance" "neutral" and "return" positions: cylinder ports are blocked in "neutral" and pump flow is directed to reservoir.
F.	Y-31068-B1	2-position, 3-way solenoid-controlled (115 volt, 60 cycle); for single-acting rams. Has "advance" and "return." Permits remote actuation (limit switch).
K.	Y-31059	2-position, 3-way pilot-operated automatic valve. Automatically extends single-acting , spring-return ram when pump motor is started. Ram retracts when motor is shut off.
L.	Y-31095	4-way lever-operated; detent-positioned; for double-acting rams. Use with subplate for multiple ram installations. Cylinder ports and pump flow are blocked in "neutral" position.
M.	Y-31057-C1-B	3-position, 4-way solenoid-controlled (115 volt, 60 cycle); for double-acting rams—permits remote actuation (limit switch). Cylinder ports and pump open to reservoir in "neutral."
N.	Y-33184	3-way lever-operated; detent-positioned; for single-acting rams. Use with subplate for multiple ram installations. Cylinder port blocked in "hold" position; pump flow blocked in "hold" and "return" positions.
P.	Y-41824	3-position, 3-way lever operated manual valve; for single-acting rams. Has "advance" and "return" positions; features metered advance, rapid ram return with cylinder port blocked when valve is in "neutral" position. Valve lever is spring loaded to return to "neutral" or "hold" position.





GAUGES

Ordering KEY NO.	OTC No.	Description
0.	—	None
1.	Y1-A	Calibrated 0-10,000 p.s.i. and in tons. For 17½, 30 and 50-ton rams.
2.	Y2-A	Calibrated 0-10,000 p.s.i. and in tons. For 50, 75 and 100-ton rams.
3.	Y5-A	Calibrated 0-10,000 p.s.i. and in metric increments.
4.	—	Special. Write for quote, giving requirements.
5.	Y6-A	Calibrated 0-6,000 p.s.i. only. For use with Y60 series power units.

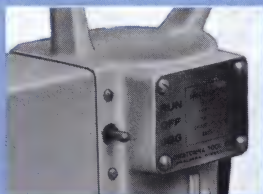
Gauges for use with Y-27 "Vanguard Jr."

No. Y5-B—Gauge, calibrated 0-10,000 p.s.i. and in metric increments. Has 2½" diameter face.
No. Y5-A—Same as above, except has 3½" diameter face.



PRESSURE CONTROLS

Ordering KEY NO.	OTC No.	Description
0.	—	None (all pumps have safety valve set for maximum pressure, and an externally-adjustable No. 22360 relief valve; adjustable from 1,000 to 10,000 p.s.i.).
3.	Y-40281	Pressure switch; attaches directly to control valve manifold. Recommended for "holding" systems. Automatically (electrically) turns off pump motor when a predetermined pressure has been reached. Adjustable from 1,000 to 10,000 p.s.i. with a 300 p.s.i. differential (differential not adjustable). If pressure drops more than 300 p.s.i. below pressure setting, action of pressure switch automatically turns on pump motor and pressure is maintained. Can also be used to actuate other electrical devices.



"Run-Off-Jog" toggle switch

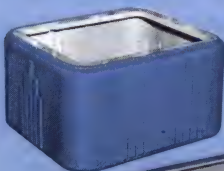
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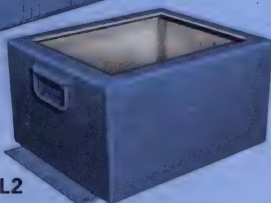
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MOTOR CONTROLS

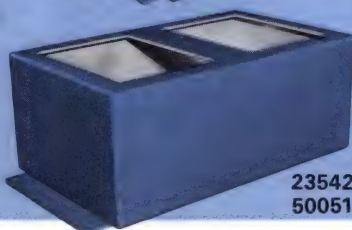
Ordering KEY LETTER	OTC No.	Description
A.	—	"Run-Off-Jog" switch—standard with Y26 and Y60 A, B and D.
B.	—	None
C.	40165	Control; 220/440 volt 3-phase motors, magnetic starter; "Run-Off-Jog" toggle switch; 50 V.A. transformer (provides 110 volt control circuit); for Y26 and Y60F.
H.	21283	Remote control hand switch; 6' cord.
J.	21284	Remote control foot switch; 10' cord.
K.	40496	Control; 220/440 volt 3-phase motors, magnetic starter; "Run-Off-Jog" toggle switch; 50 V.A. transformer (provides 110 volt control circuit); for Y26 and Y60FT tandem models.
X.	—	Special. Write for quote, giving requirements.



40063-BL2



40137-BL2



23542
50051

RESERVOIRS

Ordering KEY LETTER	OTC No.	Description
A.	—	None
B.	40063-BL2	2-gal. (462 cu. in. usable) "Standard" reservoir for Y26 A, B, D and F and Y60 A, B, D, and F. 12½" x 10½" x 6½" high.
C.	21856	Assembly—40137 5-gal. (924 cu. in. usable) reservoir and 40194 cover plate adapter for Y26 and Y60 A and B. 15" x 12½" x 8" high.
D.	40137-BL2	5-gal. (924 cu. in. usable) reservoir for Y26 and Y60 G. 15" x 12½" x 8" high.
E.	50051	7-gal. (1,386 cu. in. usable) reservoir for Y26 and Y60 BT. 20" x 12" x 8" high.
G.	21858	Assembly—40193 10-gal. (2,079 cu. in. usable) reservoir and 40194 cover plate adapter for Y26 and Y60 A and B. 15" x 12½" x 14" high.
J.	10494	Caster, four required. For 2-gal. reservoirs only.
K.	23509	Assembly—40137 5-gal. (924 cu. in. usable) reservoir and 40194 cover plate adapter for Y26 D, F and Y60 D, F and Y-70. 15" x 12½" x 8" high.
M.	23511	Assembly—40193 10-gal. (2,079 cu. in. usable) reservoir and 40194 cover plate adapter for Y26 D, F, L and Y60 D, F, and L. 15" x 12½" x 14" high.
N.	23542	7-gal. (1,386 cu. in. usable) reservoir for Y26 and Y60 DT and FT. 20" x 12" x 8" high.



T.M.

the Performance Line of compact

Vanguard Jr.®

**2-STAGE, HI-PRESSURE
POWER UNITS**
Y-27 series

- Combines compact size and light weight with 2-stage high performance.
- Additional models now available, including air-driven hydraulic power units.
- Designed for operating pressures up to 10,000 p.s.i.

**motor-driven . . . yet
costs little more than a
2-speed hand pump!**

As its name implies, this new pumping unit provides the same precision construction, dependable performance and long life as the famous OTC "Vanguard." It's the answer for customers whose applications don't require the greater oil volume delivered by the larger "Vanguard." Two-stage flexibility automatically matches pump performance to job requirement. A roller-vane type pump provides the low-pressure, high-volume stage, assuring fast ram approach and return. At approximately 200 p.s.i., the high-pressure, low-volume stage—provided by an axial-piston pump—takes over to handle high-force requirements. "Vanguard Jr." is ideal for hundreds of hydraulic applications such as clamping, bending, pressing, forming, testing, pulling and pushing. Readily portable, thanks to light weight (25 lbs.) and compact size (16" high). Has safety relief valve, factory-set at 10,000 p.s.i.

Available in several models, powered by electric motor (choice of 115 or 230 volt) or air motor. Options include remote hand and foot-operated motor controls, adjustable pressure regulator and pressure switch. "Vanguard Jr." starts easily under load, has been thoroughly field-tested for high-cycle reliability.

**perfectly suited for
use in the field . . .**

Not only does the light weight and compact size of "Vanguard Jr." enhance its portability, but the low amperage draw of the motor enables you to use a portable generator as an in-the-field power source! The 115 volt motor draws only 8 amps, the optional 230 volt motor just 4 amps.

**light in
weight . . .
only
25 lbs.**

**gauge
optional**



PERFORMANCE

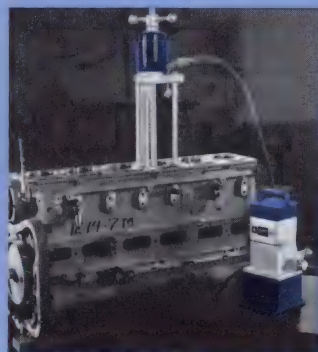
Pump's low-pressure, high-volume stage provides fast cylinder piston travel. When high force is needed, the high-pressure, low-volume stage takes over. Figures at right indicate oil delivery at various pressure levels.

Examples of oil delivery

170 cu.in./min. at 200 p.s.i.
32 cu.in./min. at 1,000 p.s.i.
25 cu.in./min. at 5,000 p.s.i.
18 cu.in./min. at 10,000 p.s.i.

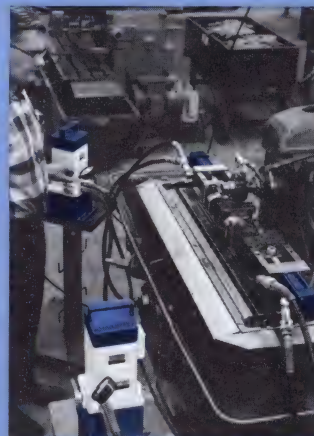
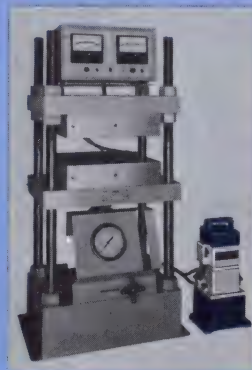
Vanguard Jr.® power at work!

Pumping unit powers special OTC puller which removes and installs engine cylinder sleeves.

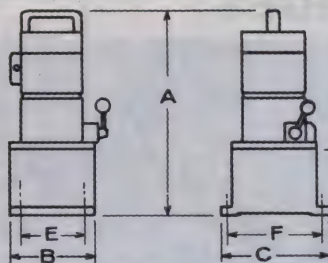


OTC hydraulic puller removes brake drum from punch press crankshaft. "Vanguard Jr." is source of power.

A respected manufacturer of laboratory presses actually redesigned his product in order to offer "Vanguard Jr." as optional equipment.



Clamping operation on milling machine increased parts production up to 108%. Two OTC pumps used.



DIMENSIONS

(Dimensions for general reference only)

Pump Series	A	B	C	D	E	F
Y27 w/elec. motor	16"	6"	8"	4 3/4"	5 1/8"	7 1/8"
Y27 w/air motor	17 1/8"	6"	8"	4 3/4"	5 1/8"	7 1/8"

NOTE: Dimensions shown apply to pumps with 104 cu. in. reservoir.

Four mounting holes:
(7/16" dia.)

... with
Universal
motor



for double-acting rams . . .

No. Y27BO-1-A-O-O

10,000 p.s.i. pump with: universal motor (1/2 h.p., 12,000 r.p.m., 115 volt, 60/50 cycle A.C. sgl. phase); built-in 4-way control valve; "Run-Off-Jog" motor control switch; .45 gal. (104 cu. in.) reservoir.

for single-acting rams . . .

No. Y27AO-1-A-O-O

Same as above, except has built-in 3-way control valve.

No. Y27DO-7-A-1-O

Pump is equipped with same universal motor as above units, but has automatic valve feature and remote motor control hand switch. When used with spring-return, single-acting ram, permits operator to extend ram by actuating switch—ram retracts automatically when switch is released.

... with
Air-driven
motor



Ideal for use in explosive atmospheres or remote areas where electricity is unavailable. Requires 80 p.s.i. air supply to start under full load.

for double-acting rams . . .

No. Y27LBO-21-A-3-O

10,000 p.s.i. pump with 1 h.p. air-driven motor (performance based on 100 p.s.i. air pressure at 40 c.f.m.); built-in 4-way control valve; hand-operated motor control valve; .45 gal. (104 cu. in.) reservoir.

for single-acting rams . . .

No. Y27LAO-21-A-3-O

Same as above, except has built-in 3-way control valve.

... with
2-gal.
reservoir



Has 2-gal. (462 cu. in.) reservoir, to permit full stroke of large displacement rams. Also suited to applications in which several rams are used.

for double-acting rams . . .

No. Y27BO-1-B-O-O

10,000 p.s.i. pump with: universal motor (1/2 h.p., 12,000 r.p.m., 115 volt, 60/50 cycle A.C. sgl. phase); built-in 4-way control valve; "Run-Off-Jog" motor control switch; 2-gal. (462 cu. in.) reservoir.

for single-acting rams . . .

No. Y27AO-1-B-O-O

Same as above, except has built-in 3-way control valve.

An example of "Vanguard Jr." speed!

Job: To fully extend an OTC YS-107A ram (has 10" stroke)	Y-27 Series Power Unit	Y-21 Series Hand Pump
5" of ram travel under no load	4 seconds	140 strokes of pump handle
5" of ram travel under load	34 seconds	
Total time required	38 seconds	4 to 5 minutes*

*Handle effort at max. pressure is over 100 lbs.



PRESSURE GAUGES

No. Y5-B—Pressure gauge for Y-27 pumps. Calibrated 0-10,000 p.s.i. and in metric increments. Has 2 1/2" diameter face.

No. Y5-A—Same as above, except has 3 1/2" diameter face.

OPTIONS AVAILABLE . . .

Your Y-27 series pumping unit may be ordered with remote hand or foot-operated motor controls, external pressure regulator, pressure switch and 2-gal. (462 cu. in.) reservoir.



HYDRAULIC ACCESSORIES



SHUT-OFF VALVE

No. **V-9**—Needle valve for fine metering—use several for controlling multiple single-acting rams simultaneously, yet independently. $\frac{3}{8}$ " NPT ports.

SUBPLATES

No. **Y-30547**—For remote mounting of Y-30384, Y-30601, Y-31094, Y-31095 and Y-33184 control valves. $\frac{3}{8}$ " NPT ports.

No. **Y-30588**—Same as Y-30547 above, except has built-in pressure regulating valve—adjustable from 1,000 to 10,000 p.s.i.

PILOT-OPERATED CHECK VALVE

No. **Y-21854**—For double-acting ram installations. Maintains ram pressure when valve lever is in "neutral" position.

PRESSURE REGULATOR VALVE

No. **Y-30776**—For remote location in hydraulic system. Adjustable from 1,000 to 10,000 p.s.i.

CHECK VALVE

No. **Y-21568**—Installs in hydraulic line; permits flow in one direction only. $\frac{3}{8}$ " NPT male ends.

HYDRAULIC HOSE

Reinforced wire-braid hose has spring guard on each end. In two types: (1) 2-ply, for hand pump applications; (2) 3-ply, for power pump applications. Consult factory for special requirements.

2-PLY HOSE 3-PLY HOSE

3' length, $\frac{3}{8}$ " NPT ends.	—	No. Y21-9
2' length, $\frac{3}{8}$ " NPT ends.	No. Y21-6	—
6' length, $\frac{1}{4}$ " NPT ends.	No. Y21-5	—
6' length, $\frac{3}{8}$ " NPT ends.	No. Y21-2	No. Y21-7
8' length, $\frac{3}{8}$ " NPT ends.	No. Y21-2A	No. Y21-8

QUICK COUPLERS

Precision built and designed for high pressures. Permit disconnecting hose without loss of oil.

	$\frac{3}{8}$ " NPT Size	$\frac{1}{4}$ " NPT Size
Complete Quick Coupler.	No. Y-25	No. Y25-A
Ram Half Coupler and Dust Cap. . .	No. Y25-1	No. Y25A-1
Ram Half Coupler Dust Cap only. . .	No. Y25-2	No. Y25A-2
Hose Half Coupler only.	No. Y25-3	No. Y25A-3
Hose Half Coupler Dust Cap only. . .	No. Y25-4	—

ADAPTERS AND FITTINGS

No. **Y1-B**—**TEE ADAPTER**—For installing gauge between pump and hose coupling. Has $\frac{1}{4}$ " and $\frac{3}{8}$ " NPT female and $\frac{3}{8}$ " NPT male.

No. **Y1-C**—**DOUBLE TEE ADAPTER**—Permits use of more than one ram in series with one pump. Three $\frac{3}{8}$ " NPT ports.

No. **33726**—**MANIFOLD BLOCK**—For use when a multiple-ram system is required. Has six $\frac{3}{8}$ " NPT ports.

No. **Y1-D**—"Y" **MANIFOLD**—Useful when connecting two rams to a single line. Three $\frac{3}{8}$ " NPT ports.

No. **Y1-E-45° FITTING**—Often used when mounting gauge at an angle on connection such as Y1-B. Male and female $\frac{1}{4}$ " NPT ends.

No. **Y1-F**—**SWIVEL CONNECTOR**—1 $\frac{1}{2}$ " long. Has male and female $\frac{3}{8}$ " NPT ends.

No. **Y1-H-45° SWIVEL CONNECTOR**—Male and female $\frac{3}{8}$ " NPT ends.

No. **Y2-A1**—**REDUCING BUSHING**— $\frac{1}{4}$ " NPT female and $\frac{3}{8}$ " NPT male.

No. **Y1-G**—**COUPLING**—Both ends $\frac{3}{8}$ " NPT female.

No. **10474**—**STREET ELBOW**—Male and female $\frac{3}{8}$ " NPT ends.

No. **10673**—**SHORT NIPPLE**—1 $\frac{1}{2}$ " long, $\frac{3}{8}$ " NPT male ends.

No. **13828**—**LONG NIPPLE**—2" long, $\frac{3}{8}$ " NPT male ends.

No. **10675**—**LONG NIPPLE**—2" long, $\frac{1}{4}$ " NPT male ends.

No. **13831**—**REDUCING FITTING**— $\frac{1}{4}$ " NPT female and $\frac{3}{8}$ " NPT female.

No. **10647**—**90° ELBOW**— $\frac{3}{8}$ " NPT female ends.

No. **10909**—**PIPE PLUG**—Heat-treated, $\frac{3}{8}$ " NPT.

No. **10479**—**PIPE PLUG**—Heat-treated, $\frac{1}{4}$ " NPT.

"O" RING SEAL HOOK

No. **JDH-6**—Accomplishes with ease the often difficult job of removing and installing "O" ring seals.

HYDRAULIC OIL

Assure dependable performance of OTC rams and pumps by using this high-grade, specially-prepared oil. Contains foam suppressant additives; high viscosity index.

OTC No.	Amount of oil	Viscosity	Recommended for use with
YO-21	1 qt.	215 SSU @ 100°F.	Y-20, Y-21, Y-22, Y-26, Y-27, Y-29, Y-60 and Y-70 Pumps
YO-22	1 gal.		
YO-23	5 gal.		



PORTABLE, "IN-LINE"

Hydraulic Tester

Y-90 and Y-92 series

- Ends guesswork in "trouble-shooting" of hydraulic systems, isolates faulty components!
- Accurately checks oil flow, pressure and temperature!

Hit-and-miss guesswork, needless teardown and excessive downtime are prevented with this unit. You can accurately check hydraulic system component performance under operating conditions to pin-point trouble. Unit is adaptable to "in-line" testing hook-ups, since it can withstand full system pressure at both inlet and outlet ports. And, it will not be damaged if incorrectly connected to system! Precise control of pressure is possible. Accuracy is maintained regardless of hydraulic fluid viscosity or temperature. Tests systems delivering up to 50 g.p.m. at operating pressure to 5000 p.s.i. Fully portable for field use. New dual pressure gauge model permits highly-accurate readings in low pressure ranges . . . useful when testing power shift transmissions, power steering systems, etc.

- No. Y-90**—Tester with *single* pressure gauge (0-5,000 p.s.i.). Has two adapter unions for 3/4" NPT male fittings. Wt. 33 lbs.
No. Y-91—Same as Y-90, except has *metric-calibrated* gauges.
No. Y-92—Tester with *dual* pressure gauges (0-600 and 0-5000 p.s.i.). Has two adapter unions for 3/4" NPT male fittings. Wt. 37 lbs.
No. Y-93—Same as Y-92, except has *metric-calibrated* gauges.



Flo Divider

Optional attachment automatically converts OTC Hydraulic Testers from 50 to 100 g.p.m. capacity, increasing tester's range of application!

U.S. Patent No. 3,285,268

FOR DETAILS, SEE BULLETIN HT-67

Military Spec.: MIL-T-45049A



No. Y-900

SEE BULLETIN NO. NR-75
FOR COMPLETE INFORMATION

ORDERING INFORMATION

No. Y-900—"Nozlrater" diesel fuel injection nozzle tester. 5000 p.s.i. capacity. Complete with gauge guard. Weight (empty) 13 lbs.

No. Y-910-A—Universal accessory kit in metal storage box, for use with Y-900 tester. Weight, 3 lbs., 10 oz. Contents listed in chart below.

CONTENTS OF Y-910-A

Y-900-2A—Fuel line assembly, 9/16" —18 R.H. thd. with 24° on pipe.
Y-900-6—Straight adapter, 12 x 1.5mm female R.H. thd. to 1/2"—20 female L.H. thd.
Y-900-7—Straight adapter, 14 x 1.5mm female R.H. thd. to 1/2"—20 female L.H. thd.
Y-900-8—Straight adapter, 18 x 1.5mm female R.H. thd. to 1/2"—20 female L.H. thd.
Y-900-9A—Adapter nut, 9/16"—18 female R.H. thd. to 1/2"—20 female L.H. thd.
Y-900-10—Straight adapter, 3/4"—18 female R.H. thd. to 1/2"—20 female L.H. thd.
Y-900-17—Adapter nut, 3/4"—16 female R.H. thd. to 1/2"—20 female L.H. thd.
Y-900-18—Adapter nut, 9/16"—24 female R.H. thd. to 1/2"—20 female

L.H. thd.
Y-900-15—Straight adapter, 1/2"—20 male L.H. thd. (Ermeto 24° & 90° seat) to 9/16"—18 male R.H. thd. (Ermeto 24°).
Y-900-14—Straight adapter, 3/4"—24 male R.H. thd. to 9/16"—18 male R.H. thd. (female Ermeto 24°).
Y-900-3—90° adapter, 9/16"—18 male R.H. thd. (Ermeto 24°) to 9/16"—18 female R.H. thd. (Ermeto 24°).
Y-900-5—Straight adapter, 9/16"—18 male R.H. thd. (Ermeto 24°) to 1/2"—20 male L.H. thd. (80° seat).
Y-900-19—Banjo adapter, 9/16"—18 male R.H. thd. (24° seat).
Y-900-20—Adapter nut, 9/16"—18 male R.H. thd. to 9/16"—18 female L.H. thd.
Y-900-21—90° adapter nut, 9/16"—18 male R.H. thd. to 9/16"—18 female R.H. thd.

ADDITIONAL ACCESSORIES

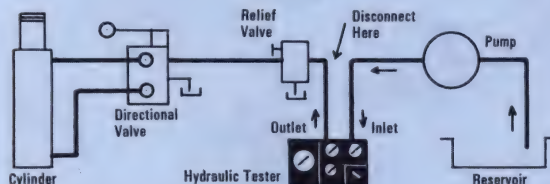
Y-900-12A—Hose adapter, 1/2"—20 UNF male and L.H. thd. to 1/4"—18 NPTF.
Y-900-13—Hose assembly, 48"—1/4" NPTF.
Y-900-22—Adapter nut, 14 x 1.5mm male thd. to 3/4"—18 female R.H. thd.

Overall width 5 1/2"
 Overall length 26"
 Overall height 11 1/4"
 Weight (empty) 13 lbs.
 Max. pressure 5000 p.s.i.
 Max. reservoir capacity692 gal. of diesel fuel (160 cu. in.)
 Usable reservoir capacity628 gal. of diesel fuel (145 cu. in.)



U.S. Patent No. 3,270,557

portable for shop or field use . . . also ideal for test bench application



TESTING A PUMP

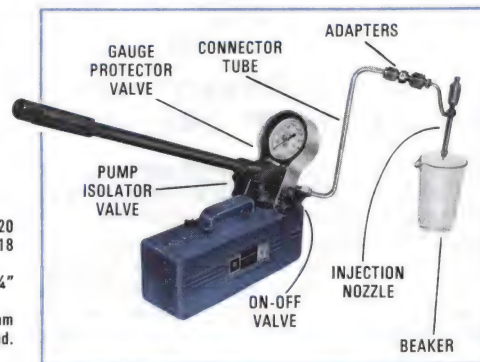
This diagram represents a typical hook-up in which the Hydraulic Tester is used to evaluate performance of system components.

nozlrater

DIESEL FUEL INJECTION NOZZLE TESTER

- Tests for leakage, "pop-off" pressure, spray pattern and chatter on a wide variety of nozzles.
- Features 5000 p.s.i. capacity.

Performs required tests on a wide variety of fuel injection nozzles used in construction equipment, industrial, farm implement and other diesel engines. Tester's rugged, lightweight aluminum reservoir holds a big 7/10 gallon of fuel; no need for frequent refilling! A replaceable 5-micron filter traps impurities. Large, easy-to-read gauge is protected by a special guard and incorporates a maximum reading indicator. Portable for field use. Displaces .147 cu. in. (2410 cu. mm) per pump stroke . . . maximum pressure is 5000 p.s.i. For testing injection nozzles of various types and sizes, an assortment of adapters and connectors is available and listed below.



SPECIFICATIONS

Outlet port For 3/4" tube
 Gauge Calibrated 0-5000 p.s.i. has 3 1/2" dial face with maximum reading indicator needle
 Gauge connection 1/4" NPT female
 Stroke of 1/2" dia. piston 1/4" Volume per full stroke147 cu. in. (2410 cu. mm)
 Intake filter 5 micron

OWATONNA TOOL COMPANY
OWATONNA, MINNESOTA 55060, U.S.A.

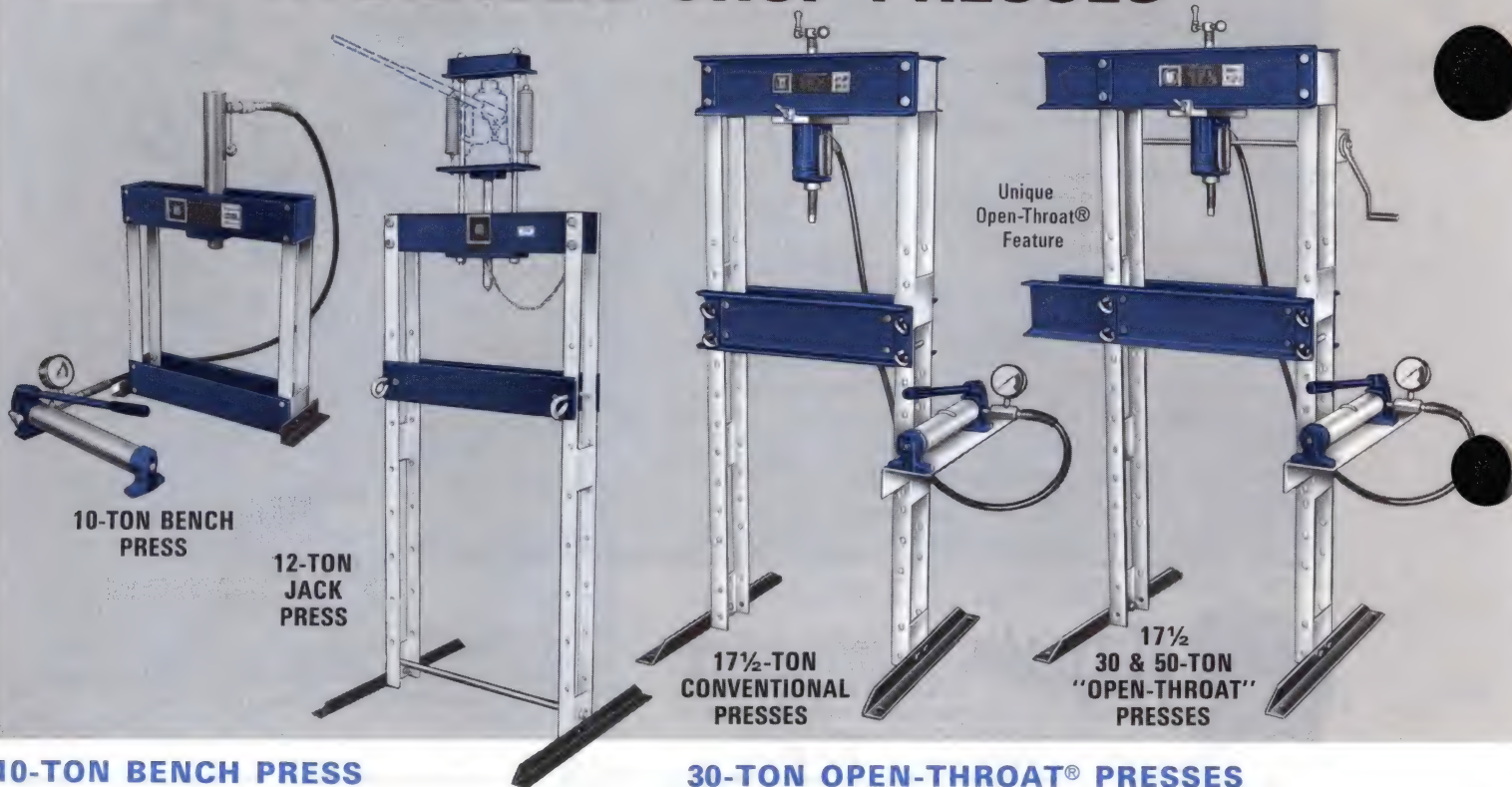


the Long Line of versatile

Military Spec: MIL-P-80128

T.M.

HYDRAULIC SHOP PRESSES



10-TON BENCH PRESS

Perfect for pressing jobs required in repair of small motors, armatures, alternators . . . an ideal piston pin press. The 4-post design allows access through uprights. Dimensions: Maximum "daylight", ram to bed—14½"; width between uprights—18"; overall height—35"; bench space required—8" x 24".

No. Y-110—Press frame only. Wt. 56 lbs.

No. Y-110-A—Press, complete with hydraulics. Wt. 70 lbs.

12-TON JACK PRESS

A common 5, 8 or 12-ton automotive hydraulic jack is the power source for this floor press. The 4-post design permits the side entry of long bars or shafts for straightening or bending. Also perfect for removing and installing stubborn bearings, other friction-fitted parts. Press bed height is adjustable. Hydraulic jack (not included) remains easily removable for other uses. Dimensions: Maximum "daylight", ram to bed—39"; width between press uprights—21"; overall height—71"; floor space required—24" x 27".

No. Y-112—Jack press (jack not included). Wt. 132 lbs.

17½-TON CONVENTIONAL AND OPEN-THROAT® PRESSES

Rugged 4-post design allows positioning of long rods and shafts for straightening or bending. Movable ram head has full horizontal travel for off-center pressing. "Open-throat" extensions (Y109-B series only) permit handling bulky work outside of press frame. Press bed height is adjustable. On Y109-B series, hand crank mechanism controls press bed height. Dimensions: Maximum "daylight", ram to bed—34¾"; width between press uprights—20"; overall height—64"; floor space required—28" x 28".

No. Y106-B—Conventional press frame only.* Wt. 179 lbs.

No. Y106-BA—Conventional press with hydraulics (includes hand-operated pump). Wt. 226 lbs.

No. Y109-B—"Open-throat" press frame only.* Wt. 210 lbs.

No. Y109-BA—"Open-throat" press with hydraulics (includes hand-operated pump). Wt. 262 lbs.

*Includes bracket for mounting hydraulic hand pump.

30-TON OPEN-THROAT® PRESSES

These "big-job" presses combine power with the unique "Open-throat" extensions which permit handling bulky work outside of press frame. Off-center pressing is facilitated by movable ram head. Press bed height is adjusted by means of hand crank. Dimensions: Maximum "daylight", ram to bed—35½"; width between press uprights—32"; overall height—68"; floor space required—32" x 43".

No. Y330-B—"Open-throat" press frame only.* Wt. 478 lbs.

No. Y330-BA—"Open-throat" press with hydraulics (includes hand-operated pump). Wt. 538 lbs.

No. Y330-BV—"Open-throat" press with hydraulics (includes "Vanguard Jr." electrically-driven pump). Wt. 540 lbs.

*Includes bracket for mounting hydraulic hand pump.

50-TON OPEN-THROAT® PRESSES

These presses provide the same versatile features as the 30-ton models listed above, but have a capacity of 50 tons for jobs requiring greater force. Dimensions: Maximum "daylight", ram to bed—34¾"; width between press uprights—36"; overall height—72"; floor space required—36" x 48½".

No. Y-1506—"Open-throat" press frame only.* Wt. 802 lbs.

No. Y1506-A—"Open-throat" press with hydraulics (includes hand-operated pump). Wt. 914 lbs.

No. Y1506-AV—"Open-throat" press with hydraulics (includes "Vanguard Jr." electrically-driven pump). Wt. 916 lbs.

*Includes bracket for mounting hydraulic hand pump.

*see next page for illustration of
25 and 50-ton presses . . . optional
"Vanguard Jr." hydraulic pump, plus
accessories for all presses*



This optional electrically-driven power unit, shown above, gives you the power needed at the touch of a button.

OTHER PUMPS

The OTC 25 and 50 ton presses, at right, can be equipped with one of OTC's air-driven or electric pumps. You'll find that the optional pumps enable you to perform many pressing jobs faster, cutting labor costs.



**25-TON
GENERAL PURPOSE
PRESS**



**50-TON
HEAVY-DUTY
PRESS**

25-TON GENERAL PURPOSE PRESSES

An amazing value . . . a powerful, sturdily-built hydraulic press at a surprisingly low price. Large 30" x 44½" working area under the ram makes positioning of even bulky work easy. The spring-return ram has a full 5" stroke . . . perfect for many industrial applications including part removal and installation, pressing bearings and other friction-fitted parts. Press has a rugged channel steel frame—resists buckling and bending, even under maximum loading. Press bed is rapidly raised and lowered by a dependable lifting mechanism. Dimensions: Maximum "daylight", ram to bed—44½"; width between press uprights—30"; overall height—69½"; floor space required—41½" x 32".

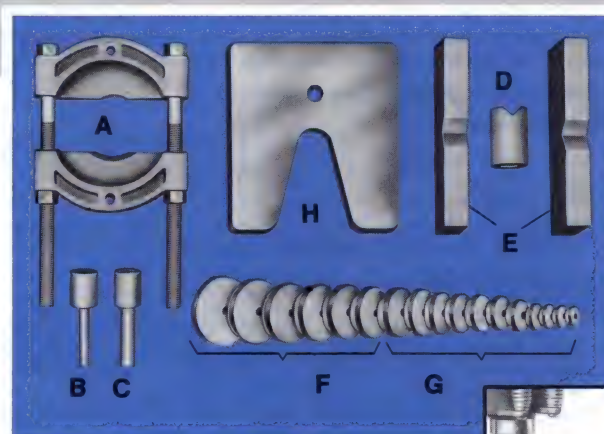
No. Y125-A—Conventional press with hydraulics (includes hand-operated pump). Wt. 441 lbs.

No. Y125-B—Conventional press with hydraulics (includes Y-13 air-driven hydraulic pump). Wt. 440 lbs.

50-TON HEAVY-DUTY PRESS

Here's a ruggedly-built press that delivers high performance at a surprisingly low price. Featuring a durable steel frame that resists buckling and bending, this is an ideal press for use by truck and implement dealers, bus and fleet repair shops, highway department shops, or other facilities where heavy equipment and machines are repaired. A two-speed hydraulic hand pump provides rapid ram approach and automatically shifts to a high pressure-low volume stage to handle high force needs. For added versatility, you can quickly remove the hydraulic pump from the press and put it to work with other hydraulically-operated equipment such as gear and bearing pullers. A hand operated winch and cable mechanism provides fast and trouble-free operation in lifting and lowering the adjustable bolster. Ram delivers full 6" stroke. Dimensions: Maximum "daylight", ram to bed—36"; width between press uprights—35"; overall height—78½"; floor space required—47½" x 32".

No. Y150-A—Conventional press with hydraulics (includes Y-22-3 hand operated pump). Wt. 693 lbs.



ACCESSORIES

Get maximum use from your press with this accessory set. Avoid those unsafe, make-shift pressing set-ups with these handy OTC accessories. Make your press an even more versatile piece of shop equipment.



Ram cap No. 34551 for 25-ton presses.



Ram cap No. Y79-2 for 17½-ton presses, Y379-2 for 30 ton and Y579-2 for 50 ton presses.

Set No.	No. Y-17-PA	No. Y-30-PA	No. Y-30-PA	No. Y-50-PA
Recommended Press Access.	17½-ton	25-ton	30-ton	50-ton
A. Bearing pulling attachment	951	952	952	952-D
B. Ram pushing adapter	938-14*	939-14**	939-14**	939½-14†
C. Ram pushing adapter	938-15**	939-15†	939-15†	939½-15†
D. V-pushing adapter	Y-79-1	Y-379-1	Y-379-1	Y-579-1
E. Pair of V-blocks	Y-79-A	Y-379-A	Y-379-A	Y-579-A

Additional Accessories (Not Included in Sets Above)

F. Step plate adapter set	630-T	630-T	630-T	630-T
G. Step plate adapter set	630-S	630-S	630-S	630-S
H. V-throat press plate	Y-34-3	Y-306	Y-306	Y-306

*½" dia. shank **¾" dia. shank †1" dia. shank †1½" dia. shank

NEW PRESS BULLETIN NO. SP-75

Additional specifications and other information on OTC shop presses, plus other press accessories, are listed in this free bulletin, available from your nearby distributor or from the OTC factory.



T.M.

the "BIG JOB" press line...

HEAVY DUTY Hydraulic Shop Presses

for maximum
service

50 TON
75 TON
100 TON
150 TON

- Ram head adjusts vertically and horizontally
- Ruggedly built of extra-thick steel bars and plates
- Powered by dependable OTC hydraulic components

In industrial plants . . . construction equipment maintenance shops . . . truck fleet garages . . . anywhere the toughest pressing jobs are encountered, an OTC Heavy Duty press is the answer. Construction is extremely rugged; extra-thick, cold-rolled steel plates and bars assure a press frame that will withstand loads of full rated capacity without buckling or bending. Ram head glides smoothly along workhead on rollers, allowing fast and easy horizontal adjustment; locks securely into desired work position. Vertical adjustment of the workhead is provided by a winch-operated lifting mechanism. Heavy frame uprights are spaced for easy side-entry of bars or shafts for straightening or bending operations. Spacious working area allows positioning of large assemblies for pressing. Presses are equipped with a heavy duty, double-acting hydraulic cylinder, and your choice of power unit . . . the "Dualmaster" hand-operated pump or OTC's electrically-driven "Vanguard" model. Both offer 2-stage performance for fast ram approach, high force under load.

50-TON CAPACITY

- No. Y-1400 — Press frame only (no hydraulics). Wt. 1,141 lbs.
No. Y1400-A — Press with hydraulics. Has Y29A-4-E "Dualmaster" hand pump, gauge, hoses, double-acting cylinder. Wt. 1,387 lbs.
No. Y1400-B — Press with hydraulics. Has Y26-A "Vanguard" electric power unit, gauge, hoses, double-acting cylinder. Wt. 1,407 lbs.

75-TON CAPACITY

- No. Y-1402 — Press frame only (no hydraulics). Wt. 1,492 lbs.
No. Y1402-A — Press with hydraulics. Has Y29A-4-E "Dualmaster" hand pump, gauge, hoses, double-acting cylinder. Wt. 1,805 lbs.
No. Y1402-B — Press with hydraulics. Has Y26-A "Vanguard" electric power unit, gauge, hoses, double-acting cylinder. Wt. 1,825 lbs.

100-TON CAPACITY

- No. Y-1404 — Press frame only (no hydraulics). Wt. 2,249 lbs.
No. Y1404-A — Press with hydraulics. Has Y29A-4-E "Dualmaster" hand pump, gauge, hoses, double-acting cylinder. Wt. 2,731 lbs.
No. Y1404-B — Press with hydraulics. Has Y26-A "Vanguard" electric power unit, gauge, hoses, double-acting cylinder. Wt. 2,761 lbs.

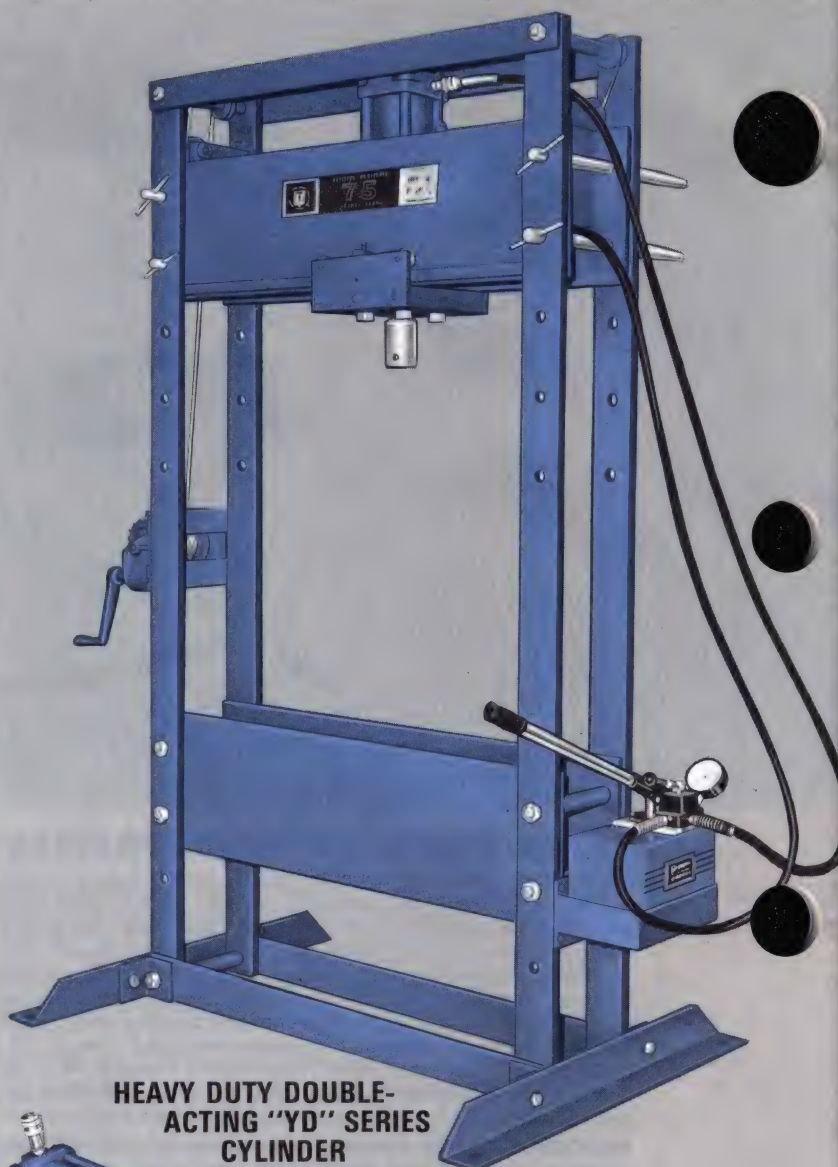
150-TON CAPACITY

- No. Y-1406 — Press frame only (no hydraulics). Wt. 2,845 lbs.
No. Y1406-A — Press with hydraulics. Has Y29A-4-E "Dualmaster" hand pump, gauge, hoses, double-acting cylinder. Wt. 3,499 lbs.
No. Y1406-B — Press with hydraulics. Has Y26-A "Vanguard" electric pump, gauge, hoses, double-acting cylinder. Wt. 3,519 lbs.

Above presses shipped F.O.B. Owatonna, Minn. U.S.A.

SEE OTC BULLETIN SP-75

Additional specifications and other information on the entire OTC shop press line appear in our free Bulletin No. SP-75. Obtain a copy from your nearby OTC distributor or write directly to the OTC factory.



HEAVY DUTY DOUBLE-ACTING "YD" SERIES CYLINDER

The "muscle" of your press! Designed for operating pressures up to 10,000 p.s.i., these precision cylinders offer reliable, leak-proof performance, year after year. Bronze rod and piston bushings are featured.

PRESS DIMENSIONS

Capacity Rating	Maximum "Daylight" Ram to Bed	Width Between Press Uprights	Overall Height	Floor Space Req'd
50-TON	48 1/2"	43"	96"	57" x 42"
75-TON	45 3/4"	45"	96"	61" x 42"
100-TON	60 5/8"	49"	119 7/8"	67" x 44"
150-TON	57 3/8"	48"	119 7/8"	68" x 46"

HYDRAULIC PUMPS

Choice of hand-operated or electrically-driven power unit for your OTC shop press!



"Dualmaster"
2-stage
Hand Pump

"Vanguard"
2-stage
Electric
Pump



the ultimate in high-tonnage hydraulic presses . . .

ROLL-BED®

T.M.

Dept. of Defense Spec:
00-P-636C



U.S. Patent
No. 3,168,034

PRESS DIMENSIONS

Capacity Rating	Maximum "Daylight" Ram to Bed	Width Between Press Uprights	Overall Height	Floor Space Req'd
50-TON	40 1/2"	42"	95 1/2"	50" x 37"
75-TON	39"	45"	95 1/2"	53" x 43"
100-TON	60"	48"	119 3/8"	58" x 47"
150-TON	58 1/8"	48"	119 3/8"	58" x 51"

THE ROLL-BED IN ACTION!



An overhead crane loads heavy work onto the "Roll-Bed."



Operator rolls bed and work back under ram with ease.

Heavy Duty Presses

for maximum
service

50 TON
75 TON
100 TON
150 TON

With the patented "Roll-Bed" feature! Press bed rolls out, permitting use of an overhead crane to load heavy work onto bed. Bed is easily rolled back under ram for pressing; unloading is just as easy! Spread between bed members is widely adjustable to accommodate both large and small assemblies. Press frames are built of heavy, cold-rolled steel bars and plates . . . press will withstand full-capacity loads without buckling or bending. Heavy frame uprights are spaced for easy side entry of long bars or shafts. Workhead adjusts vertically by means of sturdy winch. The ram head glides smoothly along the workhead on rollers, locks securely into desired work position. Equipped with "YD" series heavy duty, double-acting hydraulic cylinder. Choice of hand-operated or electrically-driven pumping units.

50-TON CAPACITY

- No. Y-1401 — Press frame only (no hydraulics). Wt. 1,795 lbs.
- No. Y1401-A — Press with hydraulics. Has Y29A-4-E "Dualmaster" hand pump, gauge, hoses, double-acting cylinder. Wt. 1,998 lbs.
- No. Y1401-B — Press with hydraulics. Has Y26-A "Vanguard" electric power unit, gauge, hoses, double-acting cylinder. Wt. 2,018 lbs.

75-TON CAPACITY

- No. Y-1403 — Press frame only (no hydraulics). Wt. 2,362 lbs.
- No. Y1403-A — Press with hydraulics. Has Y29A-4-E "Dualmaster" hand pump, gauge, hoses, double-acting cylinder. Wt. 2,666 lbs.
- No. Y1403-B — Press with hydraulics. Has Y26-A "Vanguard" electric power unit, gauge, hoses, double-acting cylinder. Wt. 2,686 lbs.

100-TON CAPACITY

- No. Y-1405 — Press frame only (no hydraulics). Wt. 3,419 lbs.
- No. Y1405-A — Press with hydraulics. Has Y29A-4-E "Dualmaster" hand pump, gauge, hoses, double-acting cylinder. Wt. 3,901 lbs.
- No. Y1405-B — Press with hydraulics. Has Y26-A "Vanguard" electric power unit, gauge, hoses, double-acting cylinder. Wt. 3,921 lbs.

150-TON CAPACITY

- No. Y-1407 — Press frame only (no hydraulics). Wt. 4,370 lbs.
- No. Y1407-A — Press with hydraulics. Has Y29A-4-E "Dualmaster" hand pump, gauge, hoses, double-acting cylinder. Wt. 4,890 lbs.
- No. Y1407-B — Press with hydraulics. Has Y26-A "Vanguard" electric power unit, gauge, hoses, double-acting cylinder. Wt. 4,902 lbs.

*Above presses shipped F.O.B.
Owatonna, Minn. U.S.A.*

HEAVY DUTY STRAIGHTENING FIXTURES



Fixtures on press bed for straightening of a rod.

These precision-built fixtures are for use with all 50 through 150-ton capacity OTC presses. They make bar or rod straightening easy and accurate within .004". Rollers are ball bearing mounted and handle raises or lowers rollers for ease in turning the work.

- No. 50393 — Fixture for use with 50 and 75-ton presses. Wt. 104 lbs.
- No. 50392 — Fixture for use with 100 and 150-ton presses. Wt. 196 lbs.



for safe, dependable and essential

LIFTING POWER ... MOBILE FLOOR CRANES

U.S. Patent No. 3,367,512
Patented 1969 Canada
(Patents apply to models
1809 and 1810 only)

Military Spec: MIL-C4551E

with the
space-saving
FOLD-AWAY
feature!

**TWO HEAVY DUTY
MODELS TO
CHOOSE FROM:**

2,000 LB. CAPACITY

Model No. 1809

4,000 LB. CAPACITY

Model No. 1810

HYDRAULIC PUMP

Two-speed action for
fast boom elevation;
descent is made under
precise control.

STURDY CONSTRUCTION

The tubular frame
resists buckling
and bending.

The versatile features and rugged construction of OTC heavy duty cranes let you handle any lifting job with speed and safety. To conserve valuable floor space, the crane folds into a compact package for storage. For "close-in" work, leg spread adjusts to clear vehicle wheels, other obstacles. Telescoping boom extension gives additional reach. An OTC 2-speed hydraulic hand pump provides fast boom travel; descent of boom is under precise control of operator. Equipped with roller-bearing mounted wheels, crane rolls smoothly into lifting position or storage location . . . steering dolly provides maneuverability.

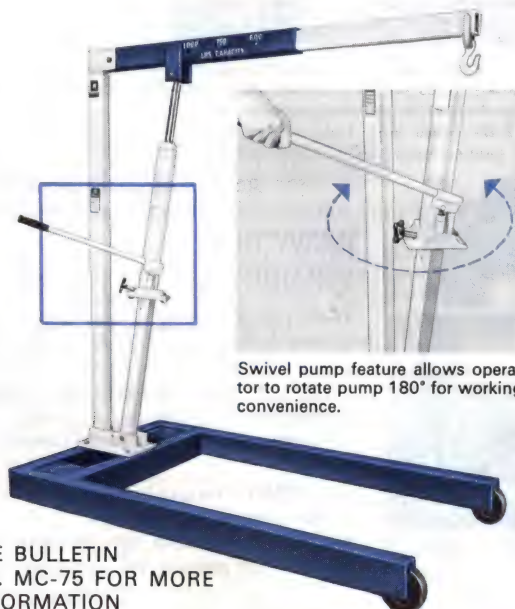
When dolly is released, crane settles securely on rear supports.

3-position leg spread
adjustment adds
versatility.

TRUCK MOUNTING

OTC's No. 1809-T truck
crane readily attaches
to your truck bed . . . con-
sult the factory for information.

**for lighter lifting needs, choose
the standard 1,000 lb. capacity model**



Swivel pump feature allows opera-
tor to rotate pump 180° for working
convenience.

Extremely adaptable for all types of lifting requirements, OTC's No. 1807 1,000 lb. capacity crane offers reliable hydraulic lifting power for your shop or maintenance department. This crane has "auto-lock" positioning—a system which allows the operator to raise the lifting boom by hand into any position quickly without having to use the hydraulic pump. Once the boom is situated, it locks into place automatically, hydraulically.

ORDERING INFORMATION

No. 1807—1,000 lb. capacity fixed-leg crane with hydraulic lifting jack and grab hook for lifting chain (chain not included). Wt., 197 lbs.

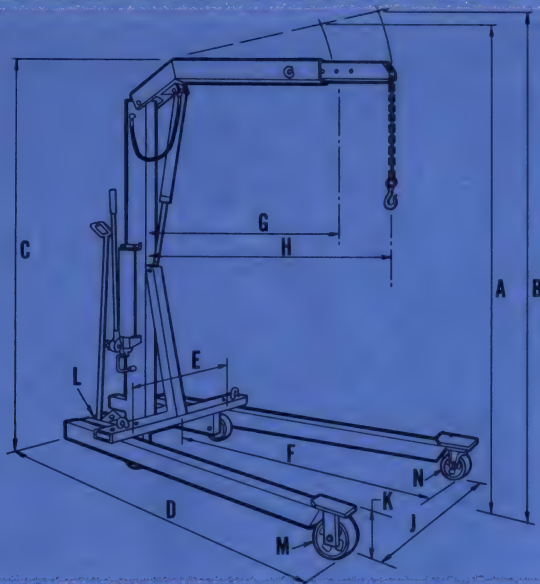
No. 1809—2,000 lb. capacity heavy duty crane with Y22-1 hydraulic hand pump. A 52" lifting chain with a hook on each end is included. Wt., 488 lbs.

No. 1810—4,000 lb. capacity heavy duty crane with Y22-1 hydraulic hand pump. A 52" lifting chain with a hook on each end is included. Wt., 640 lbs.

No. 1810-C—"Cab-over-engine" boom attachment. Used with No. 1810 4,000 lb. capacity crane to service "cab-over-engine" trucks. Wt., 24 lbs.



SEE BULLETIN
NO. MC-75 FOR MORE
INFORMATION



CRANE SPECIFICATIONS AND DIMENSIONS

Model No.	1807	1809	1810
Capacity, boom retracted	1,000 lbs.	2,000 lbs.	4,000 lbs.
Capacity, boom extended	600 lbs.	1,500 lbs.	3,000 lbs.
(A) Max. boom hgt., boom retracted . . .	97"	107"	107"
(B) Max. boom hgt., boom extended . . .	112"	118"	118"
(C) Overall hgt., boom horizontal	67"	79"	82"
(D) Overall length	61½"	83"	89"
(E) Minimum throat width	28"	24"	25"
(F) Inside leg length	50½"	54"	57"
(G) Effective boom reach (retracted) . . .	43½"	33½"	35½"
(H) Effective boom reach (extended) . . .	54½"	48½"	50½"
(I) Inside leg width	28"	24"-36"-48"	26"-40"-52½"
	(fixed)	(3-position)	(3-position)
(J) Leg height	5½"	8"	9½"
(K) Dolly wheel diameter	—	5"	5"
(L) Wheel diameter	5"	6"	8"
(M) Caster diameter	4"	5"	6"
Floor space, folded	—	27" x 38"	31" x 42"
Height, folded	—	77"	85"
Weight	197 lbs.	488 lbs.	670 lbs.



T.M.

Mil-S-45944(WE)

HEAVY DUTY, SELF-LOCKING LOAD-POSITIONING SLINGS

LOAD-ROTOR®

Rugged casting contains self-locking worm-and-gear set

Heavy duty chain has a swiveling hook on each end

⅝" hex drive end accepts socket, speed handle

- The accessory that makes your crane or hoist even more versatile.
- Ideal for removing and installing engines and other components.

TRANSMISSIONS

Used with an OTC mobile crane, the "Load-Rotor" sling makes removal and installation of engines a faster, easier and safer operation.



LOADS OF UP TO 4000 LBS. CAN EASILY BE TILTED AT ANY ANGLE!

A POSITIONING DEVICE ... NOT A HOIST!

ELECTRIC MOTORS

BARRELS

MACHINES

Here's an easier way to handle and position engines, transmissions, machinery and other heavy and bulky components! Used with a crane or hoist, "Load-Rotor" slings greatly reduce job time, effort and hazard. A self-locking worm-and-gear set in the sling's head permits rapid adjustment of the angle of the component being handled. When proper aligning of parts is required, as in engine installation, this tilting feature will make the job an easy, one-man operation. The component is tilted or leveled (from horizontal to nearly vertical) by merely turning the sling's ⅝" hex drive end with a common speed handle and socket. The rugged chain has a forged swiveling hook on each end.

NO. 1805 ... 2,000 LB. CAPACITY

2,000 lb. capacity "Load-Rotor" positioning sling has ¼" high-test chain, 52" in length, with forged swiveling hook on each end. A pair of special mounting brackets is also included. ⅝" hex drive end. Gear ratio: 34-1. Lifting eye has 1 ¼" opening. Weight, 9 lbs.



NO. 1806 ... 4,000 LB. CAPACITY

4,000 lb. capacity "Load-Rotor" positioning sling has ⅝" high-test chain, 60" in length, with forged swiveling hook on each end. A pair of special mounting brackets is also included. ⅝" hex drive end. Gear ratio: 82-1. Lifting eye has 1 ¾" opening. Weight, 23 lbs.





T.M.

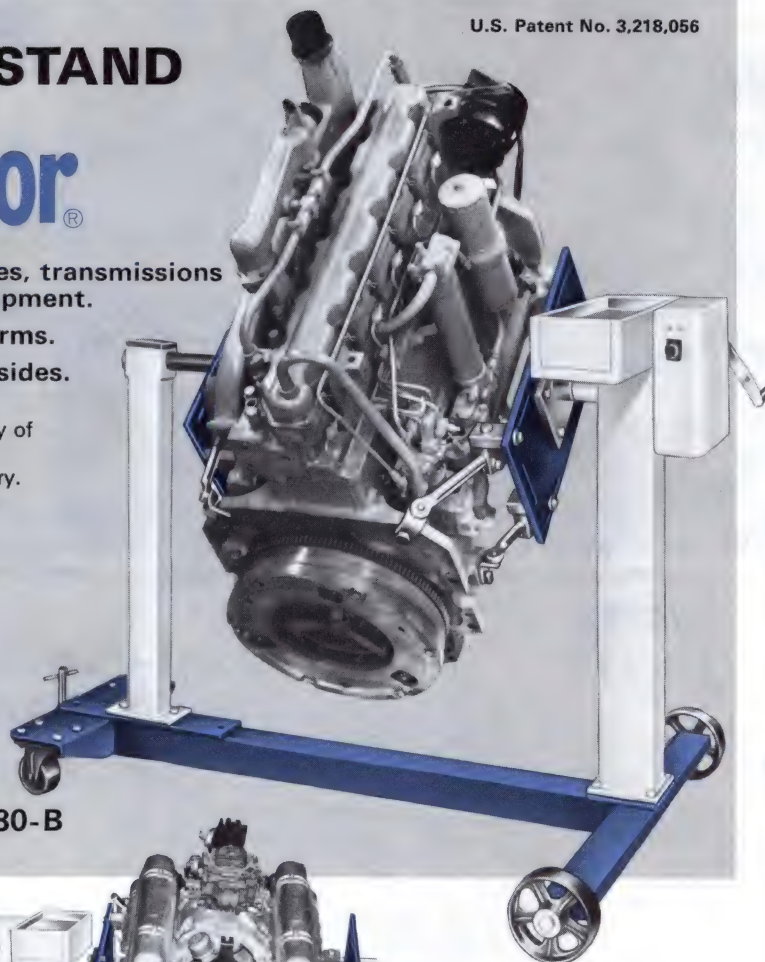
the heavy-duty **REPAIR STAND****Motor-rotor®**

U.S. Patent No. 3,218,056

- Has 2,000 lb. capacity . . . handles engines, transmissions of trucks, tractors and construction equipment.
- Features unique universal mounting arms.
- Supports mounted unit from both sides.

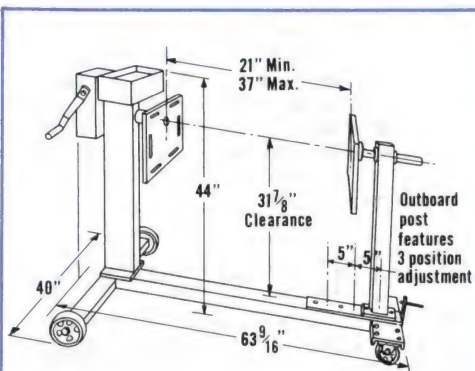
"AdjustaGrip" arms enable you to mount an endless variety of engines, transmissions, torque converters, rear axles and other components, without special adapters being necessary. Component is solidly cradled in the stand—supported from both sides—just as it is in the vehicle. Twin-post design, featuring laterally-adjustable outboard support, provides an extremely stable work-holding unit. Gearbox allows full rotation of mounted unit for service, with just a turn of the crank . . . locks safely in position. The stand rolls smoothly on wheels and casters, is easily maneuvered. Screw-type floor brake anchors stand at desired work location. A handy built-in tool tray is also featured.

Military Spec.:
MIL-S-45004-D

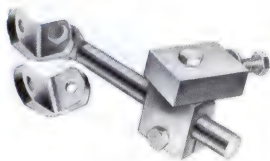
No. 1730-B

**MOUNT THEM
ALL—THE RIGHT
WAY...**

**ENGINES
TRANSMISSIONS
TORQUE CONVERTERS
REAR AXLES**



NOTE: When loads of over 1000 lbs. are to be mounted, it is recommended that more than four "AdjustaGrip" arms be used!

**"AdjustaGrip" MOUNTING ARMS**

Each arm has five points of adjustment, permitting its attachment to the normal mounting holes of the component . . . whatever their location!

Whether you're mounting a big V-8, an opposed-type engine, a foreign engine or a large truck transmission, your "Motor-rotor" can handle it. You won't have to invest in costly, seldom-used adapter plates to handle unusual engines!

ORDERING INFORMATION

No. 1730-B —Repair stand. Includes four No. 1718 "AdjustaGrip" universal mounting arms. Shipping wt., 340 lbs.

No. 1718—"AdjustaGrip" arm (one only). Includes two attaching brackets: one for 1/2" dia. cap screws, one for 3/4" dia. cap screws. Wt., 4 1/2 lbs.



100-TON PORTABLE, HYDRAULIC MASTER PIN PUSHER/INSTALLER

FOR

ALLIS-CHALMERS, CATERPILLAR, EUCLID AND IHC TRACK

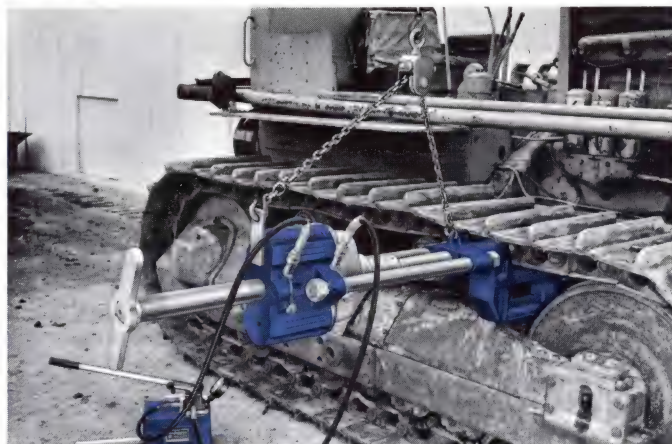
- For "splitting" crawler tractor track!
- Eliminates unsafe "sledgehammer" methods!
- Tooling is available for most tractor models!
- Hydraulic ram, pump are detachable for other uses!



"Basic" set shown
is used with optional
tooling to service various
tractor models!

Portable for field use!

No longer must the removal and installation of crawler tractor track master pins and bushings be a difficult, hazardous and time-consuming task. With OTC's Master Pin Pusher/Installer, up to 100 tons of portable hydraulic force does the job easily, quickly and safely. Removes master pins and bushings in the shop or in the field. You can get at the tractor's under-carriage or replace broken sidelinks without the back-breaking effort, excessive "down-time" and needless damage to track parts which so often result when old-fashioned "torch and sledgehammer" methods are used. The Master Pin Press is equipped with a double-acting OTC "Power-Twin" hydraulic ram, powered by OTC's versatile "Dual-master" hydraulic hand pump... these hydraulic units are easily detachable for use with OTC Sprocket Pullers and other hydraulically-powered service equipment. To the "basic" Master Pin Press of your choice, you add only the optional tooling required for the specific tractor makes and models you wish to service. For additional details and complete ordering information, see our Bulletin No. PP-66A.



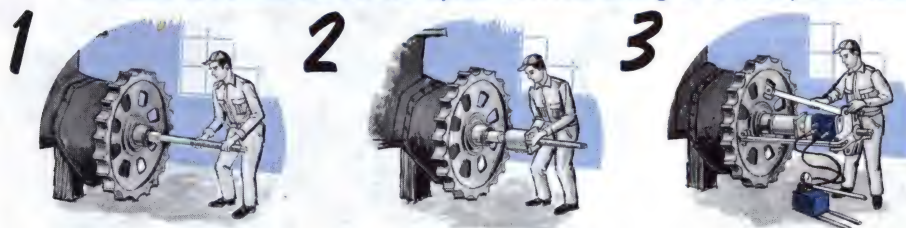
SEE OTC BULLETIN PP-66A

For additional information and complete ordering instructions for OTC's Master Pin Press, obtain Bulletin PP-66A from your nearby OTC distributor or write Owatonna Tool Company, Owatonna, Minn.



50-TON AND 100-TON PORTABLE, HYDRAULIC SPROCKET PULLER/INSTALLERS

- For removing *and* installing crawler tractor final drive sprockets!
- Services Allis-Chalmers, Caterpillar and International-Harvester!
- Puller is assembled *on* the sprocket... no lifting of a heavy assembly!



1 First, the ram screw is connected to sprocket shaft with an adapter.

2 Spacer tube adapter is then placed over ram screw and against hub.

3 Ram, puller head and legs are added. Pump is operated to pull sprocket.

OTC Sprocket Service System is easier, faster, safer!

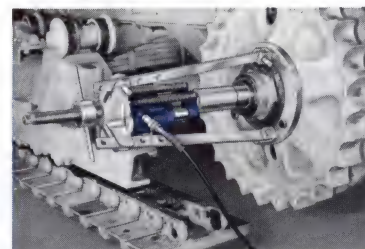
Remove and replace crawler tractor sprockets the new OTC way...approved by leading manufacturers! OTC Sprocket Puller/Installers make this normally difficult job a safe and simple operation. Makeshift, "sledgehammer" methods are replaced by precision tooling and dependable, versatile OTC hydraulic power components. Lifting of an entire, heavy puller assembly is eliminated...the puller's ram screw is first attached to the sprocket shaft, then the puller is assembled *on* the sprocket, piece by piece! The usual need for a chain-fall or other supporting device is eliminated; "in-the-field" sprocket service is possible! Hydraulic ram and pump are detachable for other uses. You "custom-build" your sprocket

puller/installer to suit your exact needs. First, select the "basic" 50-ton or 100-ton set you need. Then, add *only* the tooling necessary for the specific tractor makes and models you intend to service... you *don't* pay for adapters you'll never use. See OTC's Bulletin No. ST-62 for the full story!

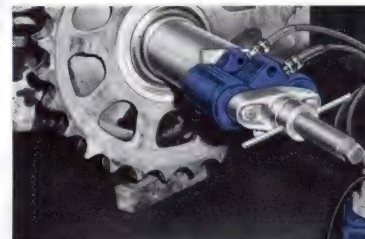
INDUSTRIAL APPLICATIONS...

These pullers are also ideal for removing and installing large sprockets, flywheels and other industrial machinery components.

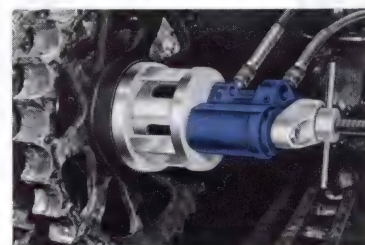
FOR MORE INFORMATION,
SEE OTC BULLETIN ST-62



Removal of Allis-Chalmers sprocket.



Installation of Caterpillar sprocket.



Installation of IHC tractor sprocket.



wrenches for industrial maintenance...

GIANT ADJUSTABLE WRENCHES

A workman need not be loaded down with an armful of fixed-size wrenches . . . OTC "Slim-Twins" handle 42 sizes from 1 1/8" to 4 3/4". Valuable storage space is saved . . . two "Slim-Twins," weighing just 36 lbs., can replace over 1,000 lbs. of fixed-size wrenches. Rugged . . . drop-forged from quality alloy steel and heat-treated. The OA-24 is rated to withstand 2,000 ft. lbs. of torque, and the OA-36 can take up to 5,000 ft. lbs. Exclusive head design gives extra strength at leverage points and adjustments that will not slip. Slimness of head makes work in close quarters easy! Two jaws are supplied with the No. OA-24B.

OTC No.	Size Range	Increments of Jaw Adjustment	Length	Head Thickness	Wt. (lbs.)
OA-24	1 1/8" to 2 1/8"	1/8"	24"	7/8"	10
OA-24B	*1 1/8" to 2 1/8"	1/8"	24"	7/8"	14
OA-36	2 3/4" to 4 3/4"	1/8"	36"	1 1/8"	22

*TWO jaws are supplied with OA-24B.

Slim-Twins®

Fed. Spec.:
GGG-W-631b

OA-36 OA-24

THIS

NOT THIS

METRIC HEX KEY WRENCHES

With many imported machine tools being used today, and with increasing emphasis on the metric system as the universal measurement system, every industrial maintenance department should have a complete set of metric hex key wrenches.

The OTC No. MW-10-K Metric Hex Key Wrench Set contains 10 popular sizes, each made of durable, high quality steel with black rust-proof finish.

No. MW-10-K—Metric hex key wrench set with case. Wt., 9 oz.

OTC No.	Size (mm)	OTC No.	Size (mm)
MW-1	1.27	MW-6	4
MW-2	1.5	MW-7	5
MW-3	2	MW-8	6
MW-4	2.5	MW-9	8
MW-5	3	MW-10	10

OWATONNA TOOL COMPANY

1.27 MM THRU 10 MM

METRIC HEX KEY WRENCH SET

NO. MW-10-K

MW-10-K

Kit contains ten popular metric sizes in roll-up vinyl case.

ALLEN TYPE SET SCREW WRENCHES

OTC No.	Size	Fits Set Screws	Fits HH Cap Screws	OTC No.	Size	Fits Set Screws	Fits HH Cap Screws
W-1	1/16"	6	—	W-10	9/16"	3/8"	3/8" & 7/16"
W-2	3/64"	8	—	W-12	5/8"	3/4"	1/2"
W-3	3/32"	10 & 12	—	W-13-A	7/16"	—	—
W-4	1/8"	14	8	W-16	1/2"	7/8"	3/4"
W-5	5/32"	16	10	W-18	5/16"	1" & 1 1/8"	3/4"
W-6	3/16"	18	14	W-20	3/4"	1 1/4" & 1 1/2"	1"
W-7	7/32"	20	16	W-24	3/4"	1 1/2"	1 1/8" & 1 1/4"
W-8	1/4"	22	18	W-32	1"	1 3/4" & 2"	1 1/2"

No. W-14L—Plastic kit containing the following wrenches: W-1, W-2, W-3, W-4, W-5, W-6, W-7, W-8, W-10 and W-12.

OWATONNA TOOL COMPANY

ALLEN WRENCHES

OTC

Today's widespread use of socket head cap screws makes a set of these wrenches a mechanic's necessity.

W-14L

FLARE NUT WRENCHES

Milled slots permit wrenches to be slipped over tubing used on fuel, oil and vacuum lines. Hex openings fit nuts snugly so that slipping and damage to soft nuts is eliminated.

... wrenches for a wide variety of jobs!

FLARE NUT WRENCHES

OTC Number	Size Openings	Head Thickness	Slot Size	Length
CS-1214	3/8" x 7/16"	11/32"	3/16" x 1/4"	5 1/2"
CS-1618	1/2" x 9/16"	3/8"	5/16" x 3/8"	6 3/4"
CS-2022	5/8" x 1 1/16"	1/2"	7/16" x 1/2"	7 3/4"
CS-2428	3/4" x 7/8"	9/16"	9/16" x 1 1/16"	9"
CS-3236	1" x 1 1/8"	5/8"	1 3/16" x 1 5/16"	10 5/8"

No. CS-3—Set containing the following wrenches: CS-1214, CS-1618 and CS-2022.

RATCHETING CHAIN WRENCH

New head design permits turning in either direction without removing wrench from the work. Ratcheting action also makes it possible to re-grip without removal. Handles parts of most any shape... round, square, hexagon, octagon. An ideal pipe wrench.

A No. 887-D—Chain wrench, capacity 1/2" to 4 3/4" O.D.

LARGE RATCHETING CHAIN WRENCH

Chain is wrapped around part to be removed... wrench's chain attachment pin adjusts to either of two positions, for uniform contact of chain with surface of part being turned. Ratcheting action permits re-gripping without removing wrench from the work.

B No. 888—Chain wrench, capacity 3" to 6 3/4" O.D.

HEAVY DUTY REVERSIBLE RATCHET

A truly rugged, dual-duty OTC tool... 1 1/2" hex opening can be used to power OTC puller screws, as well as on other nuts of this size. Also used as a regular 3/4" or 1" drive reversible ratchet, merely by adding adapter plugs. Open ratchet mechanism for ease in cleaning. Tubular handle provides necessary leverage. Wrench will withstand 1,350 ft. lbs. of torque.

C No. P-61—Ratchet head (only).

D No. P-61-6—Ratchet adapter, 1 1/2" hex to 3/4" sq. drive.

E No. P-61-10—Ratchet adapter, 1 1/2" hex to 1" sq. drive.

F No. M-28—Tubular handle, 24" long.

ADJUSTABLE HOOK SPANNER WRENCHES

Replace many fixed-size wrenches... cover range of capacities needed to service industrial tractors, other equipment. Drop-forged jaws adjust to eleven positions for a capacity of 4 3/4" to 12 3/4" O.D. Handle overall length: 24"; diameter 1".

G No. CT-684—Spanner wrench with one 3/8" thick jaw.

No. CT-685—Spanner wrench with two interchangeable jaws: one 3/8" thick, one 1/2" thick.

HEAVY DUTY ADJUSTABLE SPANNER

Extra heavy construction. Has one 3/4" thick, eleven-position hook-jaw for a capacity of 4 3/4" to 12 3/4" O.D. Drop-forged. Handle overall length: 25 3/4"; handle diameter: 1 1/8".

H No. CT-686—Heavy duty adjustable hook spanner wrench.

ADJUSTABLE HOOK SPANNER WRENCH

Needed wherever turret adjusting nuts or packing gland nuts are used. Capacity: 1 1/2" to 4". Handle overall length: 19".

J No. 885—Adjustable hook spanner wrench.

SPECIAL ADJUSTABLE SPANNER

Ideal for adjusting pillow block bearings. Also, works well on International model "M" water pump or power take-off on all IHC tractor models. Adjustable from 1/2" to 2 3/4".

K No. Z-914—Special adjustable spanner. 9 3/4" long.



T.M.

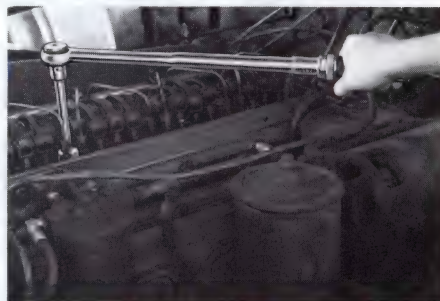
New Dual Scale *Tele-Torque*[®] TORQUE WRENCHES

- Certified Accuracy through entire range of American Standard and Metric settings.

- Torque-limiting feature reduces human error!

Automatically limits torque to the figure pre-set by the user with micrometer-type selector. A "click" is heard and felt when the desired torque is

reached, and the handle moves freely for a few degrees. Wrench operates in both directions. Wrench may be cleaned in solvents, and subjected to reasonable abuse without loss of accuracy. Calibrations of wrench are large, easy to read. Wrench handle designed to give a sure, comfortable grip, even with greasy hands. Extra length means reduced effort for user. Smooth, highly-polished chrome plated finish.



RATCHET

has 8-tooth engagement for extra strength. Only 8° handle travel needed. Works easily in close quarters!

PALM PAD

provides safer, more secure operation . . . hand pressure on smooth top keeps socket and fastener firmly engaged!

SPINNER WHEEL

for rapid run-down of a fastener having long thread travel before applying torque to fastener.

SENSORY RELEASE

gives release "signal" that can be heard and felt when pre-set torque is reached!

HEAVY DUTY

T-7 TORQUE WRENCH . . . Designed as a general all purpose utility tool, especially where extreme torque is required. Ideal for fleet operators and contractors for working on trucks, buses, tractors and cranes. NOTE: the No. T-7 is *not* dual scaled. American Standard scale only.



T-7

EASY-TO-READ SCALE

MAIN SCALE Am. Standard graduations are on front of shaft.

THIMBLE graduations nearest beveled edge.

MAIN SCALE Metric graduations on reverse side. THIMBLE graduations below American Standard graduations.



POSITIVE LOCK

Locking collar prevents accidental change of torque setting!

FEDERAL SPEC.: GGG-W-686c Type III,
Class 1 (plain-head models)
Class 2 (ratchet-head models)

ORDER INFORMATION

OTC No.	Torque Range	Graduations	Square Dr. Size	Head Type	Overall Length
T-1B	30-200 In. Lbs. 40.3-236.2 Cm./Kg.	1 In. Lb. 1.2 Cm./Kg.	1/4"	Ratchet	9 1/2"
T-2B	150-1000 In. Lbs. 201.6-1180.8 Cm./Kg.	5 In. Lb. 5.8 Cm./Kg.	3/8"	Ratchet	14 1/2"
T-3B	15-100 Ft. Lbs. 2.42-14.17 M./Kg.	1/2 Ft. Lb. .07 M./Kg.	3/8"	Ratchet	14 1/2"
T-4B	30-250 Ft. Lbs. 4.8-35.3 M./Kg.	1 Ft. Lb. .14 M./Kg.	1/2"	Ratchet	20 1/2"
T-5A	30-250 Ft. Lbs. 4.8-35.3 M./Kg.	1 Ft. Lb. .14 M./Kg.	1/2"	Plain	20"
T-6B	100-600 Ft. Lbs. 15.6-84.7 M./Kg.	2 1/2 Ft. Lb. .4 M./Kg.	3/4"	Ratchet	39 1/2"
T-7	400-2000 Ft. Lbs.	5 Ft. Lb.	1"	Plain	105"



7055

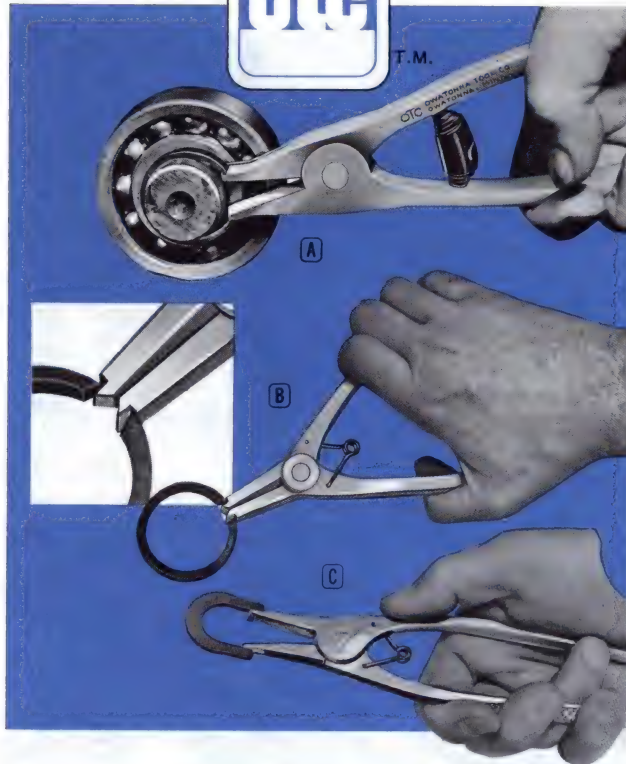
Uses standard 2 or 3 oz. collapsible tube of liquid gasket material. (Not included.)

SEALANT DISPENSER

- Perfect seal every time!
- Cut preformed gasket inventory without cutting coverage!

Today's highly stressed industrial and construction equipment components demand gaskets that are properly installed and applied. When used in conjunction with an "instant" gasket compound, the No. 7055 Sealant Dispenser delivers a seal that is simple and sure. This method eliminates virtually every gasketing problem and cuts down on material usage. Compact and lightweight, comes complete with 6-foot, 1/4" nylon hose for easy hook-up to your existing shop air supply. Requires only 25 p.s.i. of air pressure to operate. These features combine to minimize assembly time and assure a lasting, trouble-free seal. Get in the habit of using the Sealant Dispenser almost anywhere gaskets are required . . . axle and valve covers, oil pans, intake manifolds, bearing plates, window gaskets and seals. Watch profits grow and service costs drop since one tube of sealant handles most all your gasketing needs—whether you're replacing a new, complex, preformed gasket or an old, discontinued style.

No. 7055—Sealant dispenser, complete with 6' nylon air hose, two spring guards and 1/4" N.P.T. fitting. Weight, 10 oz.



OTC Retaining Ring Pliers

"GROOVE GRIP" SNAP RING PLIER

For quick, easy removal of external snap rings which locate bearings or gears on shafts. L-shaped groove on outside tips of nose permits positive gripping of ring. Maximum spread: 1 $\frac{3}{16}$ ".

A No. 614—"Groove Grip" snap ring plier, 8" long.

SNAP RING PLIER

Removes external snap rings used to locate bearings on shafts of transmissions, differentials, etc. Maximum spread: 1 $\frac{1}{16}$ ".

B No. JDT-1—Snap ring plier, 7 $\frac{3}{4}$ " long.

HORSESHOE LOCK RING PLIER

Spreads and removes horseshoe lock rings used on hydraulic brakes, differentials, transmissions. Maximum spread: 1 $\frac{1}{16}$ ".

C No. 714—Horseshoe lock ring plier, 7 $\frac{1}{2}$ " long.

RETAINING RING PLIERS

- Pliers for both internal and external rings.
- Interchangeable tips for wide range of application.





OTC offers a wide variety of retaining ring pliers for both construction and industrial applications. A handy kit, the 7053-K consists of one internal and one external retaining ring plier with four sizes of interchangeable tips to cover a wide range of ring sizes. The 7053-K contains four 90° tips (.035" dia.), four 45° tips (.045" dia.), and eight straight tips in .045" and .060" diameters. See chart below for OTC's complete plier line.

No. 7053-K—Retaining ring plier kit. Wt., 12 oz.

No. 15702—Replacement tip kit (contains 4 sets, 4 tips per set, plastic box).



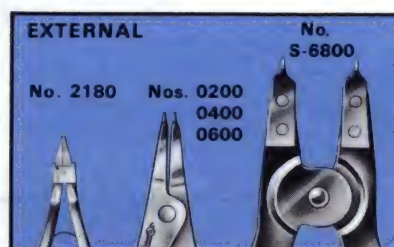
7053-K

Ring Series No.	Size Range (Ring Size No.)	Bore or Shaft Dia. Range ("inch" equiv.)	OTC Plier No.
	18 thru 23	$\frac{3}{16}$ " thru $\frac{1}{4}$ "	2180
	25 thru 87	$\frac{1}{4}$ " thru $\frac{3}{8}$ "	1120 or 0200
	93 thru 143	$\frac{1}{2}$ " thru $\frac{1}{4}$ "	1340 or 0400
	150 thru 350	$\frac{1}{2}$ " thru $\frac{3}{4}$ "	0600
5100 5101 5102	354 thru 650	$3\frac{3}{4}$ " thru $6\frac{1}{2}$ "	S-6800
	50 thru 100	$\frac{1}{2}$ " thru 1"	1120 or 0200
	106 thru 200	$1\frac{1}{16}$ " thru 2"	1340 or 0400
	215 thru 334	$2\frac{1}{8}$ " thru $3\frac{1}{32}$ "	0600
	350 thru 400	$3\frac{1}{2}$ " thru 4"	S-6800
5108			
	25 and 31	$\frac{1}{4}$ " and $\frac{1}{8}$ "	S-0100
	37 thru 102	$\frac{3}{8}$ " thru 1"	1120 or 0100
	106 thru 175	$1\frac{1}{16}$ " thru $1\frac{1}{4}$ "	1340 or 0300
	181 thru 300	$1\frac{3}{16}$ " thru 3"	0500
N5000 N5001 N5002	306 thru 625	$3\frac{1}{16}$ " thru $6\frac{1}{4}$ "	S-6700
	75 thru 137	$\frac{3}{4}$ " thru $1\frac{1}{8}$ "	1120 or 0100
	143 thru 200	$1\frac{1}{16}$ " thru 2"	1340 or 0300
	206 thru 300	$2\frac{1}{16}$ " thru 3"	0500
	315 thru 400	$3\frac{3}{32}$ " thru 4"	S-6700
5008			

Three types:
 "internal" ring pliers for rings in a bore or housing;
 "external" pliers for rings on a shaft; "convertible" pliers with adjustable pivots for either internal or external rings. Replacement tips for giant sizes S-6700 and S-6800 are available—sold in pairs.

HOW TO SELECT THE PROPER PLIER:

1. If ring number is known, locate ring number in chart; plier is listed in right-hand column.
2. Or, measure diameter of shaft or bore and locate size in chart; plier number is in right-hand column.





T.M.

Miscellaneous Service Tools

UNIVERSAL OUTSIDE THREAD CHASER

A fast, sure way to restore damaged threads on shafts, housings, cages, etc. Interchangeable dies cover a wide range of popular thread sizes. Precision dies restore threads to their original condition to make re-assembly of matching parts faster and easier. Eliminates the need for expensive thread-cutting equipment. Operation: Tighten the tool slightly on the good threads, then back off over the damaged thread area to restore the threads. The aluminum alloy V-pad will not damage the threads. V-pads and dies can be replaced when worn out. Capacity: from 1 1/4" to 5" O.D. Weight, 4 1/2 lbs.

A No. 897-A—Thread chaser, complete (with 6 dies: threads per inch—4, 5, 6, 7, 7 1/2, 8, 9, 10, 11, 11 1/2, 12, 14, 16, 18, 20 and 24).

ROLLING HEAD PRY BARS

Rolling head makes a great deal of leverage possible. Long tapered body may be used as a lining-up drift.

B No. PB-43—Pry bar; 5/16" round, 16" long.

No. PB-45—Pry bar; 3/4" round, 18" long.

OTC JIMMY BARS

Forged from chrome alloy steel and heat-treated to resist bending and breaking.

C No. PB-18—Jimmy bar; 5/8" round, 18" long.

No. PB-24—Jimmy bar; 3/4" round, 24" long.

No. PB-30—Jimmy bar; 7/8" round, 30" long.

HOLLOW PUNCH SET

For cutting holes in gaskets, rubber hose, washers, etc. One mandrel fits seven sizes of punches: 1/4", 5/16", 3/8", 7/16", 1/2", 5/8" and 3/4". Not for cutting metal. In plastic box.

E No. HP-7—Hollow punch set.

MAGNETIC PICK-UP TOOLS

Have permanent magnetic heads for retrieving parts from otherwise inaccessible places.

F No. 831—Pick-up tool with pocket clip. 6" long.

G No. 832—Flexible shaft pick-up tool. 18" long.

H No. 833—Hinged head pick-up tool. Shockproof . . . made of durable nylon. Has pocket clip. 8 1/2" in length.

J No. 834—Hinged head pick-up tool. Telescopes from 17" to 27" in length.

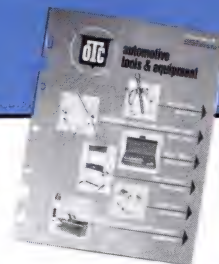
Interchangeable dies cover a wide range of popular thread sizes.



Fed. Spec.: GGG-B-101B

OTC AUTOMOTIVE TOOLS AND EQUIPMENT CATALOG

See our Catalog No. A-75 for OTC special tools and equipment for servicing automotive engines, transmissions, suspensions, brakes and other components.



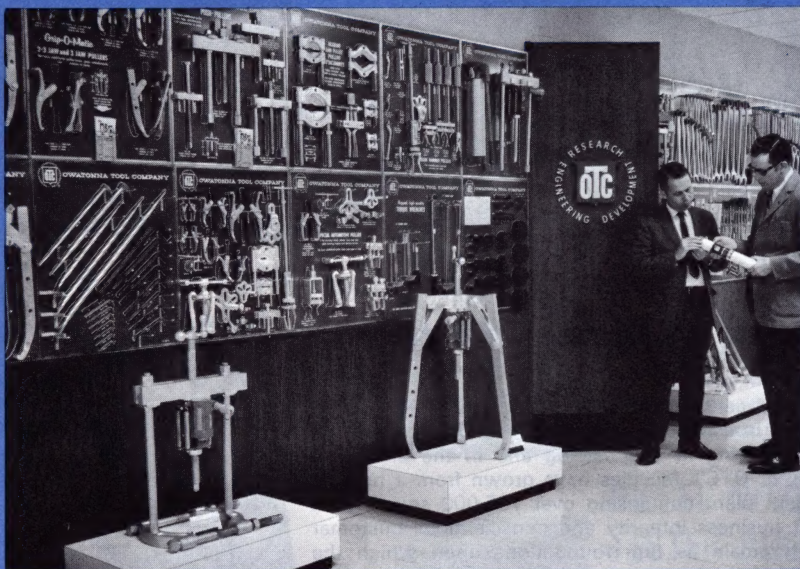


T.M.

POINT-OF-PURCHASE

TOOL DISPLAYS

- Attractive merchandising displays make OTC tools sell even faster!

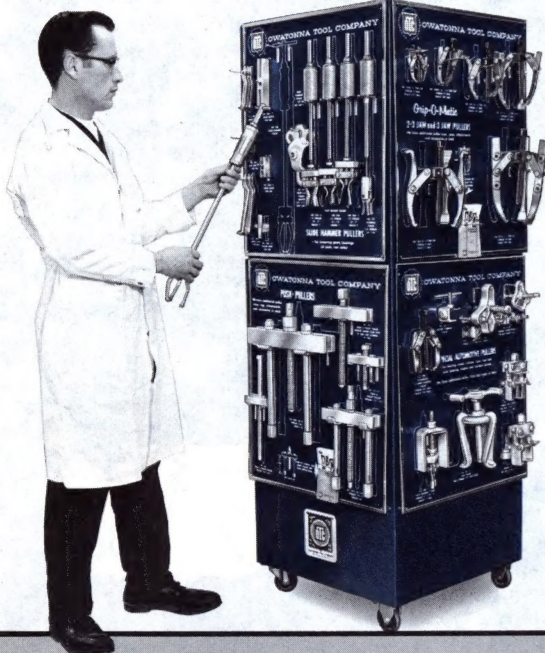


A handsome display of OTC tools adds buying excitement for the distributor's walk-in customers. It's the old, time-proven story of impulse buying... but with new eye appeal! Gleaming OTC tools against rich blue OTC display panels provide an attention-getting, sales-making combination that spells increased stock turnover. Panels may be mounted on store walls or behind the counter, or used in conjunction with the attractive OTC floor displays. Consult your OTC factory representative for display ideas and ordering information.

**GET MAXIMUM EXPOSURE
IN MINIMUM SPACE WITH
OTC FLOOR DISPLAYS...**

"SALES-MAKER" DISPLAY ▶

Our No. ZF-252-B display holds eight OTC tool panels, requires only a 2' x 6' floor space. Four 100-watt bulbs provide bright lighting to make OTC tools sparkle!

**PORTABLE
CABINET**

No. ZF-201 cabinet accepts eight OTC display panels, has inside shelves for extra inventory. Covers only four square feet of floor space.



Unique "zig-zag" design of "Sales-Maker" display adds stability to stand, conserves floor space.

ADDITIONAL OTC SALES AIDS...

Other "business builders" available to OTC distributors include store window decals, direct mailers, envelope "stuffers" and educational booklets.



OWATONNA TOOL COMPANY
OWATONNA, MINNESOTA 55060, U.S.A.



T.M.

look to OTC for solutions to your toughest service problems

since 1925 . . . a tradition of service and integrity

Since OTC's founding over a half-century ago, its product line has expanded from a score of simple tools listed in a thin pamphlet to the extensive selection of tool and equipment items appearing in this catalog and in the brochures listed on the following page. And, OTC's facilities have grown from a humble backyard shed to an ultra-modern plant comprising over 195,000 square feet. But OTC's traditions of highest business integrity and conscientious customer service have not changed, but remain as firm foundations upon which the company's success and progress has been built.



Early OTC catalog

OTC WARRANTY

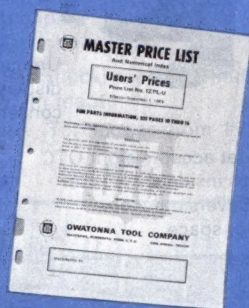
All OTC tools and equipment are warranted against defects in materials and workmanship for 90 days from date of delivery to user. This warranty does **not** cover any tool or piece of equipment that has been abused, worn out, heated, ground or otherwise altered, used for a purpose other than that for which it was intended, or used in a manner inconsistent with any instructions regarding its use. The exclusive remedy for any item found to be defective under this warranty is limited to the repair or replacement of the defective tool or piece of equipment, and OTC shall not be liable for any consequential or incidental damages. Final determination of defects shall be made by OTC in accordance with procedures established by OTC. No agent, employee or representative of OTC has any authority to bind OTC to any affirmation, representation or warranty concerning OTC products, except as stated herein.

DISCLAIMER

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

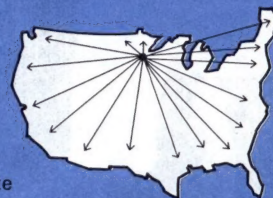
OTC SERVICE

We offer service on OTC tools at any time during their life at a cost to the user covering only the material and labor necessary to put these tools in first-class condition. Parts may be purchased to replace those lost or worn out. **Consult the OTC Master Price List for prices of parts.**



AVAILABILITY

A nation-wide network of OTC authorized warehouse distributors assures immediate availability and quick delivery of all OTC products. These warehouse distributors handle the complete line of OTC pullers, hydraulic equipment, automotive tools and other special maintenance tool and equipment items.



do you need additional information?

The contents of this General Catalog represent only a portion of OTC's wide tool and equipment line. The special literature listed below covers various OTC product categories in detail. Write OTC to obtain the free brochures you want, or contact your nearby OTC distributor. You will find him to be a dependable source of supply, eager to be of service to you.

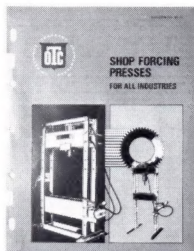
SPECIAL AUTOMOTIVE TOOLS & EQUIPMENT CATALOG

No. A-75—The wide line of special OTC automotive tools and equipment for servicing engines, transmissions, brakes, suspensions and other components is fully presented in this catalog.



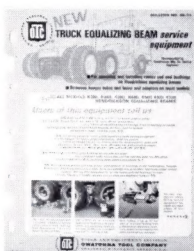
HYDRAULIC SHOP PRESS BULLETIN

No. SP-75—Provides complete details and specifications on OTC hydraulic forcing presses and press accessories. See pages 44-47 of this catalog for a "capsule" listing of the OTC shop press line.



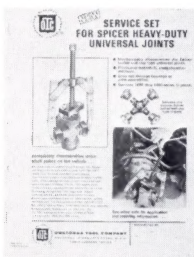
TRUCK SUSPENSION SERVICE EQUIPMENT BULLETIN

No. EB-74—Describes equipment for removing and installing bushings of the popular Hendrickson tandem truck axles. The hydraulically-powered tools cut hours of labor from this essential operation.



UNIVERSAL JOINT SERVICE SET BULLETIN

No. SU-75—OTC's service set for disassembling Spicer Heavy-Duty Universal Joints is described in this bulletin. This tool set cuts hours of labor from this essential operation.



HEAVY-DUTY MAINTENANCE EQUIPMENT BULLETIN

No. HD-74—Provides complete details and specifications on OTC's Service Tools And Equipment for repairing and servicing over-the-road and off-the-road trucks.



ENGINE SLEEVE PULLER BULLETIN

No. SL-67—Full information on these time-saving mechanical and hydraulic pullers for re-sleeving gas and diesel engines of trucks, buses, tractors.



DIESEL NOZZLE TESTER BULLETIN

No. NR-75—Details on the "Nozl-rater" testing unit and its related accessories used for evaluating operation of injection nozzles on modern diesel engines. See page 43 of this catalog.



HYDRAULIC SYSTEM TESTER BULLETIN

No. HT-67—Provides information on the portable, highly-accurate OTC units that are used to check hydraulic systems on many types of today's equipment. See page 43 of this catalog for basic information on this product line.



UNIVERSAL BUSHING DRIVER SET BULLETIN

No. BD-69A—Describes universal tools for installation of bushings, bearings and oil seals. See catalog page 23.



CRAWLER TRACTOR SERVICE EQUIPMENT BULLETINS

No. PP-66A—Covers OTC's 100-ton Master Pin Pusher/Installer which makes "splitting" tracks of crawler tractors faster and safer. Consult catalog page 51.

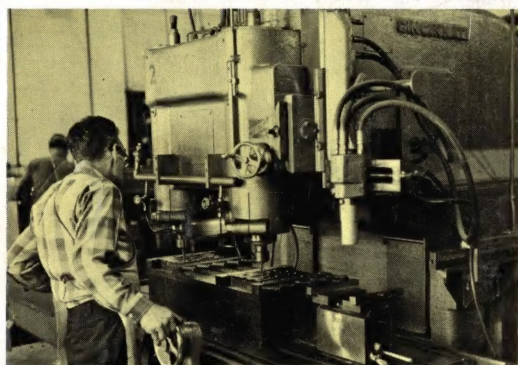
No. ST-62—Information on OTC's line of crawler tractor sprocket pulling and installing equipment. See page 51 of this catalog for basic information.



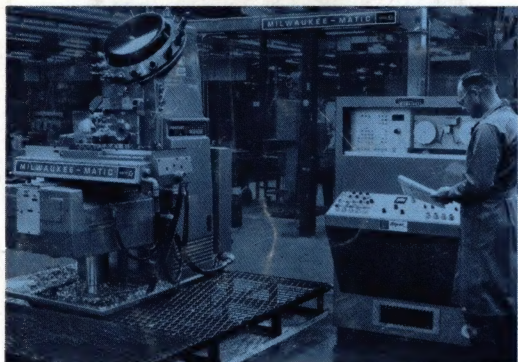
**OTC's modern plant . . .
the home of quality!**



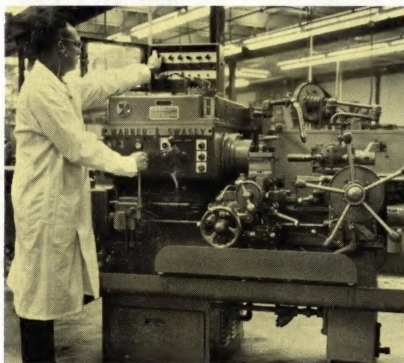
**. . .where traditional craftsmanship and
space age production methods meet!**



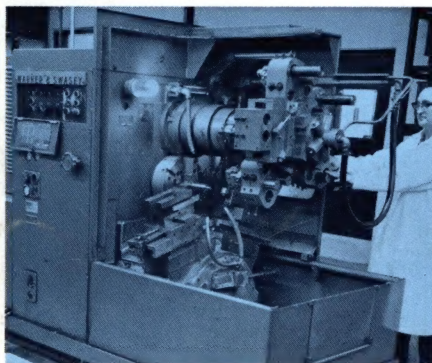
Double-head die sinker works both halves of forging die simultaneously. Uniformity of forgings is assured.



"Milwaukee-Matic" machining center is tape-programmed to perform multiple operations with an extremely high degree of accuracy.



Latest-type turret lathe combines precise accuracy with high production.



Chucker is capable of performing various operations on large or small production runs.



This battery of multiple-spindle drill presses occupies only a small portion of OTC's spacious, well-equipped machine shop. At OTC, the search for improved production methods and equipment is an endless one.



T.M.

**DIVISION OF OWATONNA TOOL COMPANY / Owatonna, Minnesota 55060, U.S.A.
Cable: TOOLCO**

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